EPI

Please note that the PreScore report for this site is located in the files in the HRS room. Please see one of the HRS coordinators for more information.

SITE NAME Houston Lighting and Power - Webster Generating Plant

TDD # F06-8902-25

PAN FTX0807PAA

CERCLID TXD000837369

PEER REVIEW TRACKING FORM

Project No: FT1306 Site Name/ID#: Houston Lighting & Power TX0000853769

TDD#: F6890225 PAN#: FRO807DAA Author: Fetter, P.

Report Title: PA under EPI for HL&P-Webster Generating Plant

First Review			Second Review		
Reviewer	Date	Section	Reviewer	Date	Section
JS	4/20	—			
al	4/25	all			
fw	4/26/89	memo			
jpt	5/10/89				

Approved for Release:

Author Date

AFITOM Date

FITOM Date

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ICF TECHNOLOGY INCORPORATED

TO: Ed Sierra, EPA Region VI, RPO

THRU: K. H. Malone, Jr., FITOM

THRU: Tim A. Hall, AFITOM

FROM: Pam Fetzer, FIT Geologist

DATE: May 3, 1989

SUBJ: Preliminary Assessment Under the Environmental Priorities Initiative Program Regarding Houston Lighting and Power - Webster Generating Plant CERCLIS # TXD000837369, TDD # F-6-8902-25, PAN FTX0807PAA.

SITE INFORMATION

The Houston Lighting and Power - Webster Generating Plant is located at 19301 State Highway 3, in Webster, Texas, one mile south of NASA Highway 1 (Mailing address P.O. Box 1700, Houston, Texas 77001). The latitude and longitude are 29°31'47" N and 95°06'10" W, respectively (Figure 1). The facility encompasses 607 acres and is publicly owned by Houston Industries.

The purpose of this investigation is to perform a Preliminary Assessment (PA) under the Environmental Priorities Initiative (EPI) Program for the EPA. The FIT was also tasked to determine the net worth and sales value of the company.

BACKGROUND/OPERATING HISTORY

The Webster Generating Plant began operating the first gas turbine electric generating unit in 1954. In 1965, the third (final) turbine went on-line and is currently operating (Figure 2).

The plant has the sole function of producing electricity by generating steam from a gas-operated turbine. In the production process, water from ground water wells is heated in the boilers and is then cooled, condensed, demineralized, chemically treated and then discharged via the discharge canal. After the effluent is routed through the surface impoundments to settle out the solids, the water is pumped through the chemical treatment process for flocculation and binding of chromium, barium, arsenic, selenium, lead, mercury, and cadmium. By-products such as phosphates, nitrates, ammonia and citric acid are treated to produce an acceptable effluent discharge (5).

No specific contaminants of concern were found within the CERCLA, RCRA and the TWC files, however, EP Toxicity (EP TOX) analyses were conducted on 4 samples for arsenic, barium, chromium, lead, cadmium, mercury, selenium and silver concentrations. These will be considered the contaminants of concern (6, 11).

Contaminants discharged from the outfalls are aluminum sulfate, ammonia, chlorine, sodium nitrate, sodium phosphates and sodium hydroxide (23). These constituents have been generated during equipment cleanings. Equipment cleanings are necessary to prevent corrosion and remove scale. Other substances such as waste oils, spent solvents, sandblasting grit, asbestos insulation, inorganic and organic sludge, and paint thinner are generated on the site.

The Texas Department of Water Resources (TDWR) analytical data concern the classification of waste. On April 8, 1981, EP TOX analyses were performed on several samples collected at the site. The results of these tests indicated that the waste materials from the demineralizer regenerant sludge, metal cleaning inorganic sludge, and organic acids collection pond sludge (11, pg. 1) were Class II wastes (TWC 241470).

The Analytical Petroleum Research (APR) Laboratories analyzed a sample of a waste oil floor drain sump and gas turbine oil trap through EP TOX analysis on September 25, 1984. Arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver were below detection limits. No analytical methods were included in the report (11).

During the July 1, 1986 closure inspection, samples were taken from the demineralizer regenerant/boiler blowdown surface impoundment. The composite soil samples, taken from 18 inches and 2 to 4 inches from the surface, were analyzed by the TDWR for EP TOX metals. The analyses revealed barium at 326 to 390 μ/l (6). Ground water monitoring well samples revealed high conductivity levels for MW-1, which is located near the discharge canal. The ground water from the monitoring wells was tested for pH by EPA method 150.1 (5). The April 24, 1987 sampling of MW-1 and MW-2 for the Comprehensive Ground water Monitoring Evaluation (CME) yielded the following results (see Page 3 of this report).

Analyses of monitoring well samples were collected on April 24, 1987 for the CME. The analytical methods used to determine the conductivity, and pH of chloride, sulfate, iron, manganese, sodium phenol, and total organic carbon were from EPA 600/4-79-020 "Methods for Chemical Analysis of Water and Wastes" (March 1979) 120.1, 150.1, 325.3, 375.4, 236.1, 243.1, 273.1, 420.1, and 415.1, respectively. Total organic halogen analysis is tested by the EPA Interim Method, 1980 "Interim Method for Total Organic Halide" 450.1. These analyses are used by Analytical Petroleum Research Laboratories, Inc., Dickinson, Texas, for the Webster Plant. No QA/QC documentation was found, nor is there any indication that duplicate samples were collected.

None of the sampling data found in the files revealed significant contamination from the impoundment sludge or water or the waste oil drain, with the exception of the values derived from the CME sampling results. The validity of the sampling data is questionable because there are no QA/QC, duplicates and background samples (5). Higher values of magnesium, iron, zinc and manganese were found for MW-1, as compared to MW-2 (26).

MW-1 (4-24-87) BY HOUSTON POWER & LIGHT*

Note: Results revealed high conductivity headings between MW-1 and MW-2 when comparing 1984 and 1987:

Parameters	MW-1 (mg/l)		MW-2 (mg/l)	
	1984 Assessment	TWC-1987 CME	1984 Assessment	TWC-1987 CME
Magnesium	270	246	34	42
Chloride	3,900	4,463	220	352
Iron	0.25	74.6	< 0.05	3.71
Zinc	1.6	0.15	0.05	< 0.02
Conductivity	12,000	17,000	1,600	3,190

*(26 Attachment S)

APR LAB RESULTS OF SAMPLES COLLECTED FROM** MW-1 AND MW-2 (4-27-87):

Parameters	MW-1 (mg/l)	MW-2 (mg/l)
Magnesium	263	42.1
Total dissolved solids	11,546	1,400
Manganese	0.8	< 0.1

**(26, Attachment T)

TWC LAB RESULTS OF SAMPLES COLLECTED FROM*** MW-1 AND MW-2 (4-27-87)

Parameters	MW-1 (mg/l)	MW-2 (mg/l)
Magnesium	246	42
Chloride	559	69
Iron	74.6	3.71
Manganese	0.850	0.043
Zinc	0.150	0.020

***(26, Attachment V)

An off-site reconnaissance inspection was not performed because the impoundments have undergone closure and neither the facility nor the impoundments can be seen from the public road.

The plant was issued a Texas Solid Waste Disposal Act Permit (August 15, 1980), Texas Department of Water Resources Solid Waste Registration Permit (No. 31633), a Wastewater Disposal Permit (under Texas Water Code 01044), a Hazardous Waste Management Program Permit (from the EPA on August 18, 1980), and an NPDES Permit (No. TX0006532 from the EPA) (13).

Information about the facility was found from the CERCLA, RCRA and the TWC files. Other related information was obtained from various state and Federal agencies.

During a TWC inspection, it was noted in the plant manifest that approximately 150 cubic yards of soil contaminated by sodium hydroxide were removed from the site. According to plant personnel, a caustic line ruptured, spilling 1,000 pounds of sodium hydroxide (7). No other facts are known about the incident. No known emergency or remedial action was taken by the EPA or related agencies.

The book assets for Houston Lighting and Power total $10 billion. The value of the plant has fully depreciated (19). The sales of the Company in 1987 totalled $3 billion (14). The net value of the company has been determined (19).

UNIT DESCRIPTION/WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

Used water from the boiler is pumped into a clay lined pond to collect and equalize the demineralizer regenerant wastes prior to wastewater treatment. The water from the demineralizer regenerant/boiler blowdown surface impoundment and the inorganic metal cleaning surface impoundment is pumped into a concrete chemical waste treatment system which is used to treat the water prior to NPDES discharge. The water is pumped into the 300 gallon mixing chamber, where the solids settle, and then is pumped into a flocculation chamber, where a flocculent is added. The type of flocculent used could not be determined. The liquid then enters the settling chamber where the solids settle, and is neutralized in the pH readjustment chamber. The effluent is discharged in accordance with the NPDES permit. The sludge that accumulates in the settling chamber is pumped to the sand drying beds for dewatering and periodic off-site removal (11).

SWMU IDENTIFICATION

Eight Solid Waste Management Units (SWMUs) have been identified at the Webster Generating Plant. Although RCRA regulation status was not found in the files, all of the SWMUs are RCRA-regulated based on CFR 264.90, subsection F.

SWMU #1 Demineralizer Regenerant/Boiler Blowdown Surface Impoundment:

The impoundment, located south of SWMU #2, is 200 feet long by 130 feet wide by 5 feet deep. Since 1970, it has been used as a holding pond for recycled water from the demineralizer regenerant and boiler

blowdown. The 3 foot clay lined unit has the capacity of 372,000 gallons. The annual volume of waste received by the impoundment was reportedly 79,300,000 gallons in 1984, but the total volume of waste received has not been determined. Sludge is removed periodically for off-site disposal and is classified as a Class II (non-hazardous) waste (TWC 241470). The files did not contain information about other contaminants present. Certification of closure was submitted September 2, 1986 (5), but in the Comprehensive Ground Water Monitoring Evaluation Report (CME), the unit is referred to as closed. According to the closure plan, all of the sludge and the first foot of the clay liner was to be removed, drummed and shipped off-site for disposal (8). It is not known whether the sludge and clay were removed and the material analyzed. Subsurface migration is considered unlikely because the permeability of the clay soil is 5.6×10^{-9} cm/sec (12). Results of borehole sampling revealed that the clay extended to a depth of 20 feet below the ground surface (12). The amount of freeboard and the diking condition are not known, so the likelihood of overflowing is undetermined. Should the impoundment overflow, the drainage pathway would be into Clear Creek, approximately 1,000 feet east of the unit (2).

SWMU #2 Inorganic Metal Cleaning Surface Impoundment:

This SWMU is located on the north side of the demineralizer regenerant surface impoundment. It is 200 feet long by 135 feet wide by 4.25 feet deep. It has been active since 1977. This unit received spent acids from metal cleaning operations. The wastewater is pumped to a concrete wastewater treatment system where it is treated and discharged under an NPDES permit (9). The total volume of waste received is not known, but it has been determined that in 1980, 18,287,000 pounds were received. Sludge from the bottom of the pond is periodically removed for off-site disposal and is classified as a Class II waste (TWC 241210)(11). The impoundment is lined with 3 feet of compacted clay. The amount of freeboard and the condition of the diking structure are not known. No report of overflowing was found in the files. If the impoundment dikes are breached, the drainage pathway would be to the east toward Clear Creek. Results of borehole sampling revealed that the permeability was 2.2×10^{-9} cm/sec (12). Subsurface migration is unlikely. The impoundment was closed and submitted for certification on November 4, 1985. In the CME, the unit is referred to as closed.
Construction of a concrete tank at the impoundment is proposed.

SWMU #3 Organic Acid Waste Pond:

Located south and adjacent to the demineralizer regenerant surface impoundment, is the organic acid waste pond. This clay lined, active unit is used to store ammoniated citric acid effluent generated from boiler and equipment cleanings (11). The unit has been in operation since 1977. It has a 270,000 gallon capacity. The total amount of

waste received is not known, but it has been determined that in 1980 2,752,500 pounds of waste were received (13). The TWDR declassified the waste to a Class II waste (TWC 215290) due to EP TOX test results (11). The condition and current status of this unit are not known. Should the impoundment overflow or the dike be breached, the drainage pathway would be to the east toward Clear Creek or to the north toward a drainage ditch that is parallel to the discharge canal.

SWMU #4 Sludge Drying Beds:

This clay lined unit is located south of the organic acid waste pond. Each bed has a 1,790 gallon capacity (13). The total waste volume, dimensions, and documentation of the unit have not been determined. Sludge from the settling chamber of the chemical waste treatment system and the oily waste treatment system is pumped to the drying beds for dewatering. The dried sludge is periodically drummed and shipped off-site for disposal (11). The sludge is classified as a Class II waste (TWC 204540). Should the unit overflow, it is possible that the material could enter Clear Creek from the west (10).

SWMU #5 Hazardous Waste Container Storage Area:

This unit is located adjacent to the waste oil tank east of the gas turbine building (7). Active since 1980, it is used to store 55-gallon drums of liquid and solid hazardous and non-hazardous wastes, including refractory brick, spent solvents, paint thinner, waste oils and sandblasting grit. The drums are stored temporarily, prior to off-site disposal. All containers in storage were disposed by Rollins (location undetermined) and the resulting cleaning materials and contaminated equipment were disposed at BFI (location undetermined) as Class II waste. The number of drums used is not known. Houston Lighting and Power submitted a closure plan on May 13, 1985, but plans to open the area as a less than 90-day storage facility (8, pg. 3). At the present time, it is not known if the facility has been opened. The July 14, 1986 inspection revealed a 500-gallon tank half full of waste oil and two empty 55-gallon drums. One of the drums was labeled "waste solvent." The waste oil and spent solvent are collected by a recycling firm. In 1980, 9,700 pounds of waste oil and spent solvent were generated; by 1984, none was generated. The sandblasting grit is stored in bins prior to off-site disposal. The unit has a concrete floor. No other protective containment device was noted during the inspection. The condition of the drums was not noted during the inspection.

SWMU #6 Chemical Waste Treatment System:

Active since 1977, the unit is used to treat demineralizer regenerant, inorganic metal cleaning waste and boiler blowdown prior

to the NPDES discharge. Located north of the intake water canal and northwest across the plant road from the inorganic pond, the unit consists of the mixing chamber (300 gallon), flocculation chamber (1,100 gallon), settling chamber (6,900 gallon) and pH adjustment chamber, (300 gallon). The Hazardous Waste Components List describes the unit as a surface processing tank but the type of tank is not known (13). 8,600 gallons were generated from this unit in 1980 (11, pg. 2). The files did not contain information about containment structures or drainage pathways.

SWMU #7 Waste Oil and Sludge Collection Facility:

Oily sludge from the oily waste treatment system is classified as either a Class I (nonhazardous) or Class II waste. No other information (quantity, age, location, pathways) about this unit was available (11, pg. 3).

SWMU #8 Asbestos in Insulation:

The original location of the asbestos insulation is not known. In 1980, 3,600 pounds of asbestos were placed in bags and then wet before being removed off-site (13, pg. 14). The waste was classified as a Class I nonhazardous waste (TWC 170750) (11). The plant map shows that the asbestos is stored in an implement shed north of, and adjacent to, the warehouse. It is not known if more asbestos insulation is present.

PATHWAY CHARACTERISTICS

Air Pathway Characteristics

No information about air pathway characteristics was available. The contaminants of concern are primarily heavy metals in the form of liquids and sludges. Migration into the air pathway is unlikely.

Ground Water Characteristics

The plant is located in the Gulf Coastal Plain on the Beaumont Formation. The lithology of the subsurface consists mainly of deltaic clays and silts grading to the south towards the Gulf of Mexico. The Beaumont Formation is part of a larger stratigraphic unit known as the Chicot Formation. The formation is approximately 700 feet thick and forms the uppermost aquifer under the site. It is used as a drinking water source for this area.

In the Webster area, the formation is differentiated into the Upper and Lower Chicot with the Alta Loma Sand member (approximately 120 feet thick) as being the main water bearing sand of the Lower Chicot.

The Upper and Lower Chicot Sands are interconnected hydrologically. The upper unit is tight because of the higher clay to sand ratio. The plant and the surrounding area pump predominantly from the Alta Loma Sand. Ground water flow direction regionally is to the south, but due to the heavy usage from the Houston area, the ground water flow is to the northwest. The generating plant has two on-site wells with total depths of 636 feet and 664 feet. They are screened in the Lower Chicot aquifer (17). The company well has a 20 foot sand bed at 100 feet and a 120 foot sand bed at 500 feet. The material between these layers is predominantly clay and silty clay. The 500 foot sand bed is the Alta Loma Member.

The formation stratigraphically below the Chicot Sand is the Evangeline Formation. Although it is also a water bearing unit, the encroachment of salt water is increasing so most wells are screened in the Alta Loma Sand unit.

Four monitoring wells are located around the impoundments at the site. The stratigraphy from the borings around the surface impoundments revealed a deltaic lithology. The stratigraphy beneath the impoundments is undefined 30 feet below the ground surface. A 15 foot sand is located 40 feet beneath the impoundments. A 15 foot silty clay layer, overlying a sandy clay, is located 60 to 80 feet beneath the impoundments. The static water level recorded in the monitoring wells is located 6 to 14 feet below the ground surface level (5). Water levels from the monitoring wells revealed that MW-1 is influenced by the cooling water discharge canal. MW-1 is located approximately 100 feet south of the canal, which has a water elevation of 12.82 feet. The canal may act as a recharge feature since the water elevation for MW-1 is 10.53 feet (5, pg. 9).

The net precipitation for the plant area is -2 inches (1).

Surface Water Characteristics

The local topography is flat, with a slight general slope to the south-southeast. The plant is located approximately 1,000 feet from Clear Creek. The intake and discharge canals are located approximately 100 to 200 feet from the surface impoundments. The surface water runoff from the ponds would flow south into Clear Creek (2). The discharge canal flows approximately 3 miles into a sewage disposal plant then, and into Clear Lake, which flows into Galveston Bay. Both are used for recreational purposes. Galveston Bay is also used for commercial fishing (22). The site is located in the San Jacinto River Basin (2).

No intakes are located on these surface water bodies because they are subject to tidal surges (15). The annual stream flow and upgradient drainage area estimates are not known.

Located in a 100 year floodplain, the site area receives a two year, 24 hour average rainfall of 5 inches. Flooding of the facility is unlikely because the

elevation difference between the site and the banks of Clear Creek is approximately 20 feet (2).

On-Site Pathway Characteristics

The facility is active, with both controlled access and a fence surrounding the property. The number of employees present on-site and the number of employees coming into direct contact with the waste process are not known. Data suggest that the waste treatment process is a closed system in which contents are pumped from one SWMU to another without being handled by employees. The sandblasting grit is in an open bin and the surface impoundments are also open. It has not been determined how the solvents, waste oils, paint thinner and sludges are drummed and removed.

TARGETS

According to the Galveston County Health Department, private drinking water wells are used, but the exact number and location of the wells is not known. Most of southeast Harris County and Galveston County use 90% to 97% surface water from Lake Houston. The remaining 3% to 10% is mixed with ground water from public supply wells (17). Irrigation well data are available, but it is not known how many of the wells are currently used for this purpose (20). According to the CME, there are 152 water wells in a 2.5 mile radius of the site. This includes 60 domestic wells, 26 public wells, 25 undocumented wells, 19 wells no longer in use, 13 industrial wells, 3 observation wells, 1 livestock well and 1 service station well. The wells range from 84 to 700 feet deep and are screened in either the Upper Chicot or the Lower Chicot Aquifer (5).

The surface water (Clear Lake) is used as contact recreation for boating, swimming and fishing. On the bay, fishing is a commercial enterprise (22).

There are no data supporting an air target or on-site target. The population within one mile is estimated at 800 (2).

CONCLUSIONS

The function of the plant is to produce electricity. The waste process is generated through the boiling and subsequent cooling of water used in the generation of steam.

The SWMUs are the receptacles for the process water pathway. The eight identified SWMUs include 3 surface impoundments, 1 set of drying beds, the chemical waste treatment system, the waste oil and sludge collection facility, the hazardous waste container storage area and the asbestos in insulation. The original location of the asbestos and the manner in which it was removed have not been determined.

The sampling results found in the 1987 CME show significant contamination of the ground water from MW-1 as compared to MW-2. MW-1 could be affected by the

discharge canal 100 feet north. Elevated levels of manganese, magnesium, iron and zinc were reported. Robert Hahn, Inspector for the TWC noted that the possibility of acid leaching metals from the soil around the surface impoundments was possible because the background soil analysis showed a higher concentration of arsenic, mercury and chromium than the soil around the impoundments. Sample analyses of other on-site areas show no significant contamination.

The state has certified a clean closure for the demineralizer regenerant surface impoundment and the inorganic metal cleaning surface impoundment. An affidavit of exclusion was granted on August 17, 1987. Clean closure requires the removal of residues but does not require the plant to fill and cap the impoundments. It is not known whether post-closure sampling has taken place.

The financial status of Houston Lighting and Power appears to be sound. The sales of the company totalled (b) (4) [redacted]. The net value of the company has not been determined.

The results from the monitoring well installation showed clay to a depth of 20 feet. The contaminants present are metals, which will not migrate quickly through clay (5).

The primary pathway of concern is ground water because the surface water used for public supply is upgradient from the site. The ground water is used to supplement the public water supply. The Alta Loma Sand Member of the Lower Chicot Aquifer is the source of the local ground water. The Lower and Upper Chicot are interconnected and the Upper Chicot outcrops on the land surface. The Upper Chicot is composed of deltaic silts, sands and clays which retard vertical migration in the Upper member. No known wells are screened in the Upper Chicot.

The static water levels in the monitoring wells ranged from 6 to 14 feet from the surface, but the levels in one of the company wells and in a City of Webster well in 1971 were 200 and 207 feet, respectively. Both static water levels have dropped since the 1950s (21). Although the aquifer is interconnected, the water bearing zone is approximately 500 to 600 feet below the land surface and horizontal migration is calculated to be approximately 6 feet per year. The exact rate of vertical migration could not be determined, but it is probable that migration is slow since the plant is located on the Beaumont Formation which has a high clay content (5). Although the site specific ground water movement is not known, the evidence indicates the discharge canal influences the background MW-1 based on high conductivity readings at both locations.

ton Lighting & Power - Webster
STATE: Texas
NUMBER: TXD000837369

f the Reference

us Waste Site Ranking System:
263. July 16, 1982,

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l Waste Compliance Monitoring
No. 31633, July 14, 1986.

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From: W.F. McGuire, Manager,
partment, Houston Lighting and
7 Information Request. November

Chief, Solid Waste Section Texas
s. From: W.F. McGuire, Manager,
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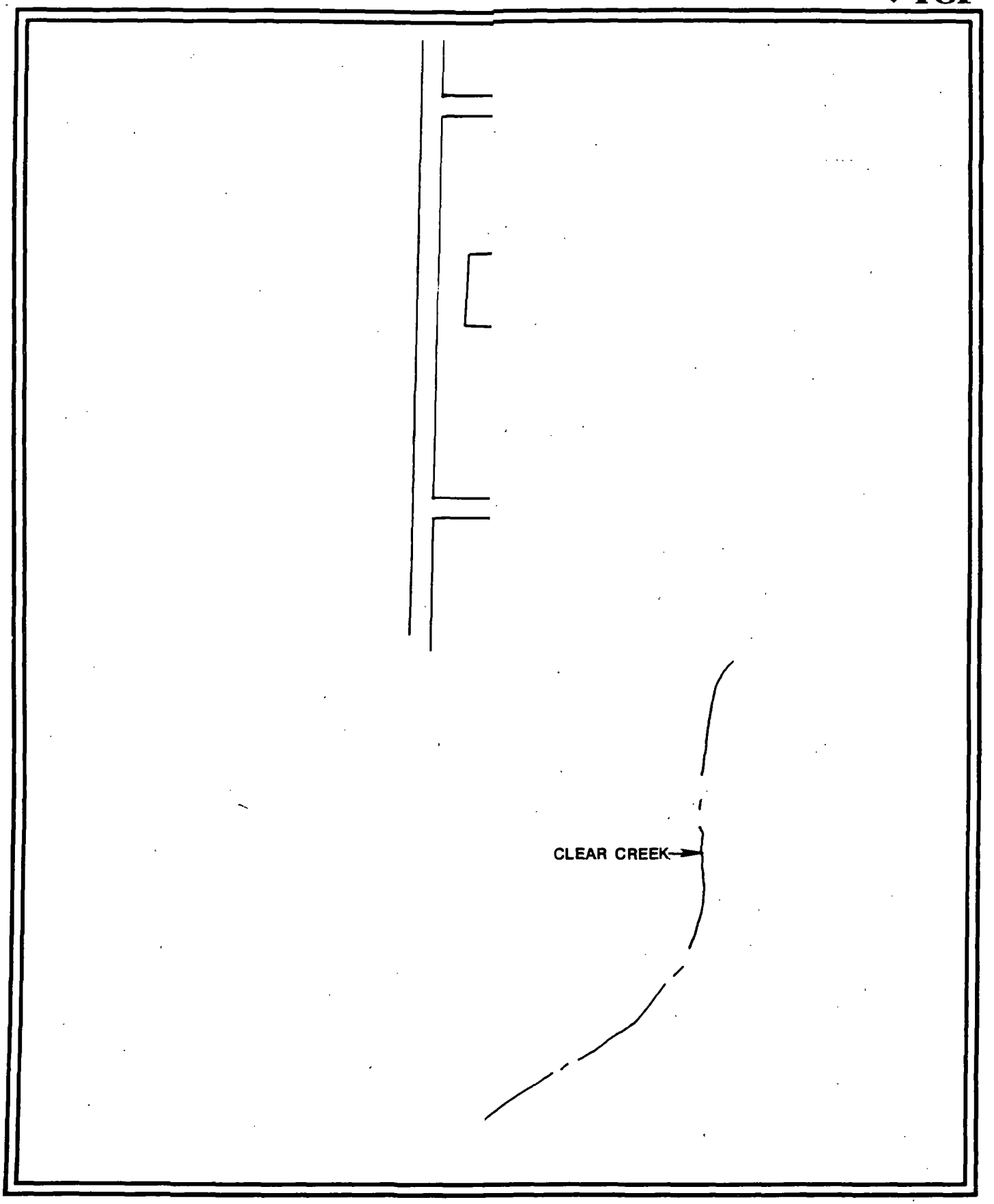

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NOT TO SCALE

Facility Plot Plan
HOUSTON LIGHTING AND POWER
WEBSTER GENERATING PLANT
WEBSTER, TX
Figure 2

PA DOCUMENTATION LOG SHEET	SITE NAME: Houston Lighting & Power - Webster CITY: Webster STATE: Texas IDENTIFICATION NUMBER: TXD000837369

Reference Number	Description of the Reference
1	U.S. EPA Uncontrolled Hazardous Waste Site Ranking System: A Users Manual. 47FR31219-31263. July 16, 1982, (Appendix A, CERCLA).
2	U.S.G.S. 7.5 minute series Topographic map. League City, TX. 1982.
3	Sax, N. Irving. 1984. Dangerous Properties of Industrial Materials. Sixth Edition. Van Nostrand Reinhold Company.
4	Hershfield, David M. Rainfall Frequency Atlas of the United States. U.S. Department of Agriculture Soil Conservation Service. Technical Paper No. 40. 1961.
5	Hahn, Robert, Texas Water Commission Inspector. Comprehensive Ground Water Monitoring Evaluation (CME) Report, TWC Reg. No. 31633, June 5, 1987.
6	Thetford, Paula, Texas Water Commission Hazardous and Solid Waste Specialist. Solid Waste Compliance Monitoring Inspection Report, TWC Reg. No. 31633, October 21, 1986.
7	Thetford, Paula, Texas Water Commission Hazardous and Solid Waste Specialist. Solid Waste Compliance Monitoring Inspection Report, TWC Reg. No. 31633, July 14, 1986.
8	Bleam, Karen, Texas Water Commission Hazardous and Solid Waste Specialist. Solid Waste Compliance Monitoring Inspection Report, TWC Reg. No. 31633, December 12, 1985.
9	Letter. To: William N. Rhea, Hazardous Waste Management Division, EPA Region VI. From: W.F. McGuire, Manager, Environmental Protection Department, Houston Lighting and Power. Re: RCRA Section 3007 Information Request. November 8, 1985.
10	Letter. To: Jay Snow, P.E., Chief, Solid Waste Section Texas Department of Water Resources. From: W.F. McGuire, Manager, Environmental Protection Department, Houston Lighting and Power. Re: Supplement to Closure Plan for Hazardous Waste Surface Impoundments. May 6, 1985.

PA DOCUMENTATION LOG SHEET	SITE NAME: Houston Lighting & Power - Webster CITY: Webster STATE: Texas IDENTIFICATION NUMBER: TXD000837369

Reference Number	Description of the Reference
11	Letter. To: Ray Henry Austin, P.E., Storage and Processing Facilities Unit, Texas Water Commission. From: W.F. McGuire, Manager, Environmental Protection Department, Houston Lighting and Power. Re: Revised Part A Application. February 8, 1985.
12	Letter. To: James R. Mertink, Houston Lighting and Power Company. From: Edward J. Ulrich, Jr., P.E., Engineer Manager, McClelland Engineers, Inc. Re: Geotechnical Investigation, Class I Disposal Ponds. November 16, 1981.
13	Part A - Permit Application Facility Background Information for Houston Lighting and Power, Webster Generating Station. August 18, 1980.
14	Standard and Poor's Corporation, Register of Corporations, Directors and Executives, Vol. I. 1989.
15	ROC. To: Mr. Sewers, Houston Water Authority. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Intake Locations for Lake Houston. March 14, 1989.
16	ROC. To: Mr. Will Moberly, Clear Lake Water Authority. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Public Water Source for Clear Lake City. March 13, 1989.
17	ROC. To: Ernest Baker, Hydrologist, U.S.G.S. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Hydrogeology of the Southeast Houston area. March 14, 1989.
18	ROC. To: Joe Castleberry, Analyst, Texas Public Utilities Commission. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Financial History of the Webster Generating Plant. March 7, 1989.
19	ROC. To: Dan Bulla, Shareholder Relations, Houston Industries. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Value of the Webster Generating Plant. March 7, 1989.

PA DOCUMENTATION LOG SHEET	SITE NAME: Houston Lighting & Power - Webster CITY: Webster STATE: Texas IDENTIFICATION NUMBER: TXD000837369

Reference Number	Description of the Reference
20	ROC. To: Janet Greenwood, Supervisor, Galveston County Health Department. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Privately Owned Ground Water Wells. March 14, 1989.
21	Texas Water Development Board, Ground-Water Data for Harris County, Texas, Volume II, Records of Wells, 1892-1972, Report 178: pp. 172, 173. January 1974.
22	ROC. To: Henry Fleming, Engineer, Corps. of Engineers From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Surface Water Use In Southeast Houston Area, March 14, 1989.
23	Application for Permit to Discharge Waste Water Form 2C NPDES. U.S. EPA Region VI. April 14, 1987.
24	ROC. To: Gene Keepper, Biologist, U.S. EPA, Region VI. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Wetlands in the Southeast Houston Area. March 23, 1989.
25	Hahn, Robert, Texas Water Commission Inspector. Comprehensive Ground Water Monitoring Evaluation (CME) Report, TWC Reg. No. 31633, September 16, 1987.

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

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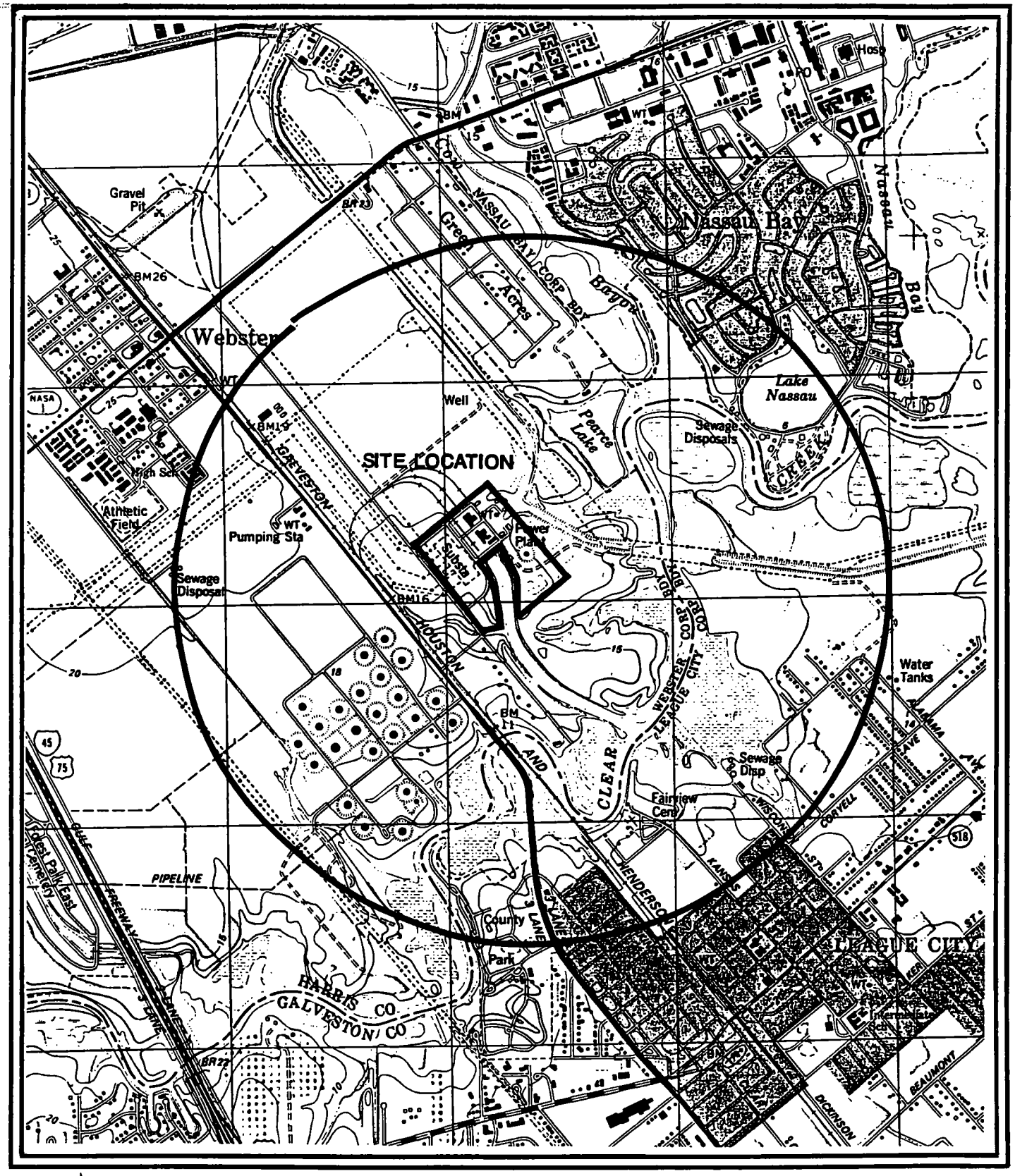


Site Location Map
HOUSTON LIGHTING & POWER
WEBSTER PLANT
WEBSTER, TX
TDD NO. F-6-8902-25
CERCLIS NO. TXD000837369

QUADRANGLE LOCATION
DALLAS, TX

REFERENCE 3

Dangerous Properties of Industrial Materials

Sixth Edition

N. Irving Sax

Carcinogenic Determination: Animal Positive IARC** 23,205,80; Indefinite IARC** 2,100,73. *Toxicology Review:* 85DHAX Cr,22,74; 27ZTAP 3,38,69.
Standards and Regulations: OSHA Standard Air: CL 100 ug(CrO_3)/m^3 (SCP-0) FEREAC 39,23540,74. DOT: Oxidizer, Label: Oxidizer FEREAC 41,47018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3; CL 50 ug/m3/15M NTIS**. Meets Criteria for Proposed OSHA Medical Records Rule FEREAC 47,30420,82.
THR: MUT data. An exper TER, CARC. HIGH scu. See also chromium compounds.
Disaster Hazard: Powerful oxidizer.
Incomp: Acetic acid; acetic anhydride; acetic anhydride + tetrahydronaphthalene; acetone; alcohols; alkali metals; ammonia; arsenic; bromine pentafluoride; butyric acid; N,N-dimethylformamide; hydrogen sulfide; peroxyformic acid; phosphorus; potassium hexacyanoferrate; pyridine; selenium; sodium; sulfur.

CHROMIUM OXYCHLORIDE

CAS RN: 14977618 NIOSH #: GB 5775000
mf: Cl_2CrO_2; mw: 154.90

Dark red liquid, musty burning odor. mp: −96.5°; bp: 115.7°; d: 1.9145 @ 25°/4°; vap press: 20 mm @ 20°.

SYNS:
CHROMYL CHLORIDE
CHLORURE DE CHROMYLE (FRENCH)
CHROMIC OXYCHLORIDE
CHROMIUM CHLORIDE OXIDE
CHROMIUM DICHLORIDE DIOXIDE
CHROMIUM DIOXIDE DICHLORIDE
CHROMIUM (VI) DIOXYCHLORIDE
CHROMYLCHLORID (GERMAN)
CHROMOXYLCHLORIDE (DUTCH)
CROMILE, CLORURO DI (ITALIAN)
CROMO, OSSICLORURO DI (ITALIAN)
DICHLORODIOXOCHROMIUM
DIOXODICHLOROCHROMIUM
OXYCHLORURE CHROMIQUE (FRENCH)

TOXICITY DATA: 3 CODEN:
mmo-sat 50 ug/plate CRNGDP 1,583,80
mma-sat 100 ug/plate CRNGDP 1,583,80

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 2,-,74. TLV-TWA 25 ppb DTLVS* 4, 100,80. DOT: Corrosive Material, Label Corrosive FEREAC 41,57018,76. Occupational Exposure to Chromium (VI) recm std: Air: CL 1 ug (Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: HIGH via scu and inhl routes. A strong irr. Hydrolyzes to form chromic and hydrochloric acids. See chromium compounds. Reacts violently with alcohol, ether, acetone, turpentine, NH_3, (Cl_2 + C), F_2, P, PCl_3, NaN_3, S, SCl.
Disaster Hazard: Dangerous; see chlorides.
Incomp: During preparation can violently explode. Ammonia; disulfur dichloride; organic solvents; phosphorus, or phosphorus trichloride; sodium azide; sulfur.

CHROMIUM(6+) ZINC OXIDE HYDRATE (1:2:6:1)

CAS RN: 15930946 NIOSH #: GB 3260000
mf: $CrO_4 \cdot H_2O_2 \cdot Zn_2 \cdot H_2O$; mw: 298.78

SYNS:
BUTTERCUP YELLOW
ZINC CHROMATE HYDROXIDE
ZINC CHROMATE (VI) HYDROXIDE
ZINC HYDROXYCHROMATE
ZINC YELLOW

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Animal Positive IARC** 2,100,73; Human Positive IARC** 23,205,80. *Toxicology Review:* PEXTAR 12,102,69; 85DHAX Cr,22,74; AMTODM 3,209,77. Occupational Exposure to Chromium (VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**.
THR: A hmn + CARC. An exper CARC. See also chromium and zinc compounds.

CHROMOMYCIN SODIUM

NIOSH #: RK 4385300

Produced by a strain of Actinomyces Olivoreticuli (85ERAY 2,1322,78)

SYN: OLIVOMYCIN, SODIUM SALT

TOXICITY DATA: 3 CODEN:
ipr-rat LDLo:1 mg/kg ANTBAL 7,53,62
ivn-rat LDLo:1 mg/kg ANTBAL 7,53,62
orl-mus LDLo:250 mg/kg ANTBAL 7,53,62
ipr-mus LD50:12700 ug/kg ANTBAL 7,53,62
scu-mus LD50:15600 ug/kg ANTBAL 7,53,62
ivn-mus LD50:138 mg/kg 85ERAY 2,1322,78
ivn-dog LDLo:300 ug/kg ANTBAL 7,53,62
ivn-rbt LDLo:2500 ug/kg ANTBAL 7,53,62
ipr-gpg LDLo:2 mg/kg ANTBAL 7,53,62

THR: HIGH ipr, ivn, orl, scu.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CHROMYL AZIDE CHLORIDE

mf: $ClCrN_3O_2$; mw: 161.47

Explosive.

CHROMYL ISOCYANATE

mf: $C_2CrN_2O_4$; mw: 168.03

Weak explosion of salt when evaporated with heat atmospheric pressure.

CHROMYL PERCHLORATE

mf: Cl_2CrO_{10}; mw: 282.90

Incomp: Self-explodes or organic solvents.

C.I. 45405

CAS RN: 6441776 NIOSH #: LM 5820000
mf: $C_{20}H_6Br_4Cl_2O_5 \cdot 2K$; mw: 794.93

SYNS:
C.I. ACID RED 98
PHLOXINE
TOYO ACID PHLOXINE

TOXICITY DATA: CODEN:
mmo-esc 15 mg/L MUREAV 16,165,72

ipr-rbt LD50:250 mg/kg	JPETAB 42,253,31
scu-rbt LDLo:500 mg/kg	JPETAB 49,187,33
ivn-rbt LDLo:400 mg/kg	JPETAB 60,125,37

THR: MOD by ingestion. Large doses cause marked depression (sometimes preceded by excitation), prolonged coma and death. Allergic skin reactions may occur from contact. Has been implicated in development of aplastic anemia. A truly habit forming drug. An exper TER in mus. MUT data.
Fire Hazard: Slight, when heated.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

BARBITURATES

SYNS:
DERIVATIVES OF BARBITURIC ACID; I.E. BARBITAL
BARBITONE
BARBITAL SODIUM

THR: MOD by ingestion. Large doses cause marked depression (sometimes preceded by excitation), prolonged coma and death. Allergic skn reactions may occur from contact. Has been implicated in development of aplastic anemia. A truly habit forming drug.
Fire Hazard: Slight, when heated.

BARBITURIC ACID

mf: $C_4H_4O_3N_2$; mw: 128.1

Crystals or white to yellow-white powder. mp: 245°; bp: 260° (decomp).

THR: MOD irr to skin, eyes and mu mem. An allergen. Has no hypnotic properties.
Fire Hazard: Slight.

BARBITURIC ACID, 5,5-DIETHYL MIXED WITH 4-(DIMETHYLAMINO)ANTIPYRINE

CAS RN: 69401338 NIOSH #: CD 2630000

SYN: PYRABITAL

TOXICITY DATA: 3 CODEN:
scu-mus TDLo:600 mg/kg (9-11D preg) TJADAB 16,118,77

THR: An exper TER.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

BARIUM

CAS RN: 7440393 NIOSH #: CA 8370000
af: Ba; at wt: 137.36

Silver-white, slightly lustrous, somewhat malleable metal. mp: 725°, bp: 1640°, d: 3.5 @ 20°, vap. press: 10 mm @ 1049°.

TOXICITY DATA: CODEN:
TLV: Air: 500 ug/m3 DTLVS* 4,35,80. Reported in EPA TSCA Inventory, 1980.
THR: No data. See also barium compounds.
Fire Hazard: Dangerous and explosive in form of dust when exposed to heat or flame or by chemical reaction.
Incomp: Acids, CCl_4, $C_2Cl_3F_3$, $C_2H_2FCl_3$, C_2Cl_4, C_2HCl_3 and water. 1,1,2-trichloro trifluoro ethane, fluorotrichloroethane, fluorotrichloromethane, trichloroethylene can detonate in contact with Ba.
For further information see Vol. 1, No. 7 and Vol. 3, No. 4 of *DPIM Report.*

BARIUM ACETATE

CAS RN: 543806 NIOSH #: AF 4550000
mf: $C_4H_6O_4 \cdot Ba$; mw: 255.44

White cryst. Water sol.

SYNS:
ACETIC ACID, BARIUM SALT
BARIUM DIACETATE
OCTAN BARNATY (CZECH)

TOXICITY DATA: 3-2 CODEN:
ori-rat LD50:921 mg/kg MarJV# 29MAR77
ivn-mus LD50:11 mg/kg TXAPA9 22,150,72
scu-rbt LDLo:96 mg/kg EQSSDX 1,1,75
ivn-rbt LDLo:12 mg/kg EQSSDX 1,1,75

OSHA Standard: Air: TWA 500 ppm (SCP-X) FEREAC 39,23540,74. Reported in EPA TSCA Inventory, 1980.
THR: HIGH ivn, scu. MOD orl.
Disaster Hazard: When heated to decomp it emits acrid smoke.

BARIUM ACETYLIDE

mf: C_2Ba; mw: 161.35

Incomp: Halogens, selenium.

BARIUM AZIDE

CAS RN: 18810587 NIOSH #: CQ 8500000
mf: BaN_6; mw: 221.40

Monoclinic prisms. mp: $-N_2$ @ about 120°, bp: explodes, d: 2.936.

TOXICITY DATA: 3 CODEN:
Aquatic Toxicity Rating: TLm96:100-10 ppm WQCHM* 2,-,74. Reported in EPA TSCA Inventory, 1980.
THR: See barium compounds (sol) and azides.
Explosion Hazard: Mod when shocked or exposed to heat. Around 275°, spont flammable in air. Very unstable.
Disaster Hazard: Dangerous; shock and heat will explode it.

BARIUM AZIDE (WET)

CAS RN: 18810587 NIOSH #: CQ 8510000

Compound contains 50% or more water (FEREAC 41,15972,76)

TOXICITY DATA: 3 CODEN:
DOT: Flammable Solid, Label: Flammable Solid FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: HIGH tox. See also barium compounds and azides.
Disaster Hazard: Possibly explosive.

TOXICITY DATA:
Currently tested by NTP for carcinogenesis by standard bioassay protocol as of December 1980.
THR: No data. Under CARC test.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

CADMIUM

CAS RN: 7440439 NIOSH #: EU 9800000
mf: Cd; mw: 112.40

Hexagonal crystals, silver-white malleable metal. mp: 320.9°, bp: 767 ± 2°, d: 8.642, vap. press: 1 mm @ 394°.

SYNS:
C.I. 77180 KADMIUM (GERMAN)

TOXICITY DATA: 3	CODEN:
ivn-rat TDLo:1250 ug/kg/(9D preg):TER	EVHPAZ 28,245,79
ipr-mus TDLo:2248 ug/kg/(8D preg):TER	TJADAB 13,33A,76
ivn-ham TDLo:2 mg/kg/(8D preg):TER	EXPEAM 25,56,69
ims-rat TDLo:45 mg/kg/4W-I:NEO	NCIUS* PH-43-64-886,SEPT,71
ims-rat TD:70 mg/kg:ETA	BJCAAI 18,124,64
ims-rat TD:63 mg/kg:ETA	NATUAS 193,592,62
ihl-man TCLo:88 ug/m3/8.6Y:SYS	AEHLAU 28,147,74
ihl-hmn LCLo:39 mg/m3/20M	AIHAAP 31,180,70
unk-man LDLo:15 mg/kg	85DCAI 2,73,70
orl-rat LD50:225 mg/kg	TXAPA9 41,667,77
ipr-rat LD50:4 mg/kg	TXAPA9 41,667,77
scu-rat LD50:9 mg/kg	TXAPA9 41,667,77
ivn-rat LD50:3 mg/kg	TXAPA9 41,667,77
unk-rat LD50:712 mg/kg	GTPZAB 22(5),6,78
unk-mus LD50:636 mg/kg	GTPZAB 22(5),6,78
orl-rbt LDLo:70 mg/kg	AMPMAR 34,127,73
scu-rbt LDLo:6 mg/kg	PROTA* -,-,55
ims-ham LDLo:25 mg/kg	NCIUS* PH-43-64-886
cyt-ham:ovr 1 umol/L	CGCGBR 26,251,80
ipr-rat TDLo:1124 ug/kg (1D male)	TXAPA9 41,194,77
scu-rat TDLo:250 ug/kg (19D preg)	APTOD9 19,A122,80
orl-mus TDLo:448 mg/kg (MGN)	AEHLAU 23,102,71

Carcinogenic Determination: Animal Positive IARC** 2,74,73.
TLV: Air: 0.05 mg/m3 DTLVS* 4,59,80; TRBMAV 33(1),85,75; JDSCAE 58(12),1767,75; JFDSAZ 39,321,74; AMBOCX 3(2),55,74; QURBAW 7(1), 75,74; AEMBAP 40,239,73; NTIS** PB-221,198; KOTTAM 11(11),1300,75; FOREAE 7,313,42; STEVA8 2(4),341,74; FCTXAV 9,105,71; AJMEAZ 38,409,65; ENVRAL 4,71,71; 85CVA2 5,63,70; PEXTAR 12,102,69; PDTNBH 6,204,77; BNYMAM 54,413,78; AMTODM 3,209,77; GSAMAQ 123, 109,71. OSHA Standard: Air: TWA 200 ug/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 191,223,224, VOL 3 S312, S313, VOL 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper TER, NEO, ETA, CARC. A human SYS. HIGH hmn ihl, unk. HIGH orl, ipr, scu, ivn, ims. MOD unk. See also cadmium compounds.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame or by chemical reaction with oxidizing agents, metals, HN_3, Zn, Se and Te.
Explosion Hazard: Mod, in the form of dust when exposed to flame.
Disaster Hazard: Dangerous; cadmium dust can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 and Vol. 3, No. 5 of *DPIM Report.*

CADMIUM (II) ACETATE

CAS RN: 543908 NIOSH #: EU 9810000
mf: $C_2H_4O_2 \cdot 1/2Cd$; mw: 116.25

Monoclinic colorless crystals, odor of acetic acid. mp: 256°, bp: decomp, d: 2.341.

SYNS:
BIS(ACETOXY)CADMIUM C.I. 77185
CADMIUM DIACETATE

TOXICITY DATA: 3	CODEN:
otr-ham:emb 1 umol/L	CNREA8 39,193,79
dnd-ham:emb 1 umol/L	CNREA8 39,193,79
ipr-mus LD50:14 mg/kg	TXAPA9 49,41,79
cyt-hmn:lym 10 nmol/L	MUREAV 85,236,81
ipr-rat TDLo:2371 ug/kg (14D preg)	BECTA6 20,206,78
ipr-rat TDLo:1 mg/kg (14D preg)	BECTA6 23,25,79
ipr-rat TDLo:2 mg/kg (20D preg)	BECTA6 23,25,79

Reported in EPA TSCA Inventory, 1980.
THR: MUT data. HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits toxic fumes of Cd.

CADMIUM BIS(2-ETHYLHEXYL) PHOSPHITE

CAS RN: 7495934 NIOSH #: TG 6475000
mf: $C_{32}H_{68}O_6P_2 \cdot Cd$; mw: 723.34

SYN: PHOSPHORUS ACID, BIS(2-ETHYLHEXYL) ESTER, CADMIUM SALT

TOXICITY DATA: 3	CODEN:
ipr-mus LDLo:250 mg/kg	CBCCT* 7,790,55

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.
THR: HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits toxic fumes of PO_x and Cd.

CADMIUM CAPRYLATE

CAS RN: 2191108 NIOSH #: RH 0370000
mf: $C_{16}H_{30}O_4 \cdot Cd$; mw: 398.86

SYN: OCTANOIC ACID, CADMIUM SALT (2:1)

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:950 mg/kg	JHEMA2 18,144,74
itr-rat LDLo:10 mg/kg	JHEMA2 18,144,74
orl-mus LD50:300 mg/kg	JHEMA2 18,144,74

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

SYN: MERCURY NUCLEATE, SOLID (DOT)

TOXICITY DATA: 3

DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: A poison. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Hg.

MERCUROPHEN

CAS RN: 17140737 NIOSH #: OW 4550000
mf: $C_6H_4HgNO_4 \cdot Na$; mw: 377.70

Brick-red odorless powder. Sol in hot H_2O.

TOXICITY DATA: 3	CODEN:
ivn-rat LDLo:8 mg/kg	12VXA5 8,661,68
ims-rat LDLo:12 mg/kg	12VXA5 8,661,68
ivn-rbt LDLo:4 mg/kg	12VXA5 8,661,68

Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: HIGH ivn, ims. See also mercury compounds. Poison.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and Hg vapors.

MERCUROPHYLLINE

CAS RN: 8012348 NIOSH #: OV 8650000

SYNS:
MERCUPURIN
MERCUZANTHIN

TOXICITY DATA: 3-2	CODEN:
ivn-hmn TDLo:28 mg/kg:CNS	JAMAAP 117,1806,41
scu-mus LD50:163 mg(Hg)/kg	JPETAB 105,336,52
ivn-mus LD50:1410 mg/kg	JPETAB 99,149,50
ivn-cat LDLo:250 mg/kg	JPETAB 99,149,50
ivn-rbt LDLo:177 mg/kg	JPETAB 99,149,50

Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: A hmn CNS. HIGH scu, ivn. MOD ivn. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Hg.

MERCUROUS CHLORIDE

CAS RN: 7546307 NIOSH #: OV 8750000
mf: Cl_2Hg_2; mw: 472.09

White, odorless, tasteless, heavy powder or crystals. Sunlight causes it to decomp into mercuric chloride and metallic Hg. Insol in H_2O, alc and ether. Protect from light. Subl @ 400°; d: 7.150.

SYNS:
MERCURY(I) CHLORIDE
C.I. 77764
CALOMEL
CALOMELANO (ITALIAN)
CHLORURE MERCUREUX (FRENCH)
CLORURO MERCUROSO (ITALIAN)
KALOMEL (GERMAN)
MERCUROCHLORIDE (DUTCH)
MERCURY MONOCHLORIDE
MERCURY PROTOCHLORIDE
MILD MERCURY CHLORIDE
QUECKSILBER(I)-CHLORID (GERMAN)
SUBCHLORIDE OF MERCURY

TOXICITY DATA: 3	CODEN:
mrc-bcs 50 mmol/L	MUREAV 77,109,80
orl-rat LD50:210 mg/kg	WRPCA2 9,119,70

Toxicology Review: SDGTB3 1(2),177,71; RREVAH 42,103,72; 27ZTAP 3,91,69. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. HIGH orl. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and Hg.

Human Tox: Excessive doses may cause Hg poisoning.

Antidote: BAL (Dimercaprol). If laxation from oral mercurous chloride should not occur, saline laxative must be administered to prevent possibility of Hg poisoning.

Med Incomp: Bromides, iodides, alkali chlorides, sulfates, sulfites, carbonates, hydroxides, lime water, acacia, ammonia, golden antimony sulfide, cocaine, cyanides, copper salts, hydrogen peroxide, iodine, iodoform, Pb salts, silver salts, soap, sulfides.

MERCURY

CAS RN: 7439976 NIOSH #: OV 4550000
af: Hg; aw: 200.59

Silvery liquid, metallic element. mp: −38.89°, bp: 356.9°, d: 13.546, vap. press: 1 mm @ 126.2°. vap press: @ 25° = 2×10^{-3} mm.

SYNS:
COLLOIDAL MERCURY
KWIK (DUTCH)
MERCURE (FRENCH)
MERCURIO (ITALIAN)
MERCURY, METALLIC (DOT)
NCI-C60399
QUECKSILBER (GERMAN)
QUICK SILVER
RTEC (POLISH)

TOXICITY DATA: 3	CODEN:
ihl-rat TCLo:890 ng/m3/24H (16W male)	GISAAA 45(3),72,80
ihl-rat TCLo:7440 ng/m3/24H (16W male)	GISAAA 45(3),72,80
ipr-rat TDLo:400 mg/kg/14D-I:ETA	ZEKBAI 61,511,57
ihl-wmn TCLo:150 ug/m3/46D:GIT	AEHLAU 33,186,78
ihl-wmn TCLo:150 ug/m3/46D:CNS	AEHLAU 33,186,78
ihl-rbt LCLo:29 mg/m3/30H	AMIHBC 7,19,53

TLV: Air: 0.05 mg(Hg)/m3 (skin) DTLVS* 4,254,80. *Toxicology Review:* AJOGAH 126(3),390,76; JTEHD6 2(3),491,77; TRBMAV 33(1),85,75; PHJOAV 213(5781),159,74; JDSCAE 58(12),1767,75; CPEDAM 13,783,74; QURBAW 7(1),75,74; AEMBAP 48,463,74; JAVMA4 164(3),277,74; 31ZNAA 2,365,73; AEMBAP 40,239,73; CTOXAO 5(2),151,72; BIOGAL 41(7),208,75; ADTEAS 5,51,72; RREVAH 42,103,72; FOREAE 7,313,42; NISIA9 27(9),942,74; MIBUBI 9(4),321,75; STEVA8 2(4),341,74; ENVRAL 13,36,77; 85CVA2 5,63,70; JOCMA7 2,337,60; PEXTAR 12,102,69; PDTNBH 6,204,77.

OSHA Standard: Air: CL 1 mg/10m3 (SCP-N) FEREAC 39,23540,74. DOT: ORM-B, Label: None FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1

SYNS:
SILICON TETRACHLORIDE TETRACHLOROSILANE

TOXICITY DATA: 2 CODEN:
ihl-rat LC50:8000 ppm/4H JIHTAB 31,343,49

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 4,-,74. DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

SKIN AND EYE IRRITATION
DATA: CODEN:
skn-rbt 500 mg/24H SEV 28ZPAK -,14,72
eye-rbt 20 mg/24H SEV 28ZPAK -,14,72

THR: SEV skn, eye irr. MOD ihl. Decomp by water with much heat into silicic acid and HCl.
Disaster Hazard: Dangerous; when heated to decomp it emits highly tox fumes of HCl; will react with water or steam to produce heat and tox and corrosive fumes.
Incomp: Dimethyl sulfoxide, K, Na.

SILICON FLUORIDE

CAS RN: 7783611 NIOSH #: VW 2327000
mf: F_4Si; mw: 104.09

Colorless gas, very pungent odor; mp: −77°; bp: −65° @ 181 mm; d: 4.67.

TOXICITY DATA: 3 CODEN:
DOT: Nonflammable Gas, Label: Nonflammable Gas FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: No data. See also fluorides and hydrofluoric acid. Very irr to skn, eyes and mu mem.
Disaster Hazard: When heated to decomp it emits tox fumes of F^-.

SILICON OXIDE

mf: OSi; mw: 44.09

THR: No tox data. Explodes spontaneously in air.

SILICON TETRAAZIDE

mf: $N_{12}Si$; mw: 196.17

THR: No tox data. See also azides. Has exploded spont.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

SILK

NIOSH #: VW 2700000

TOXICITY DATA: 3 CODEN:
imp-rat TDLo:36 mg/kg:ETA CNREA8 15,333,55

THR: An exper ETA. In the form of dust it is an allergen and a nuisance dust. A MOD fire hazard and expl hazard.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

SILVER

CAS RN: 7440224 NIOSH #: VW 3500000
af: Ag; aw: 107.87

Soft, ductile, malleable, lustrous, white metal. mp: 961.93°, bp: 2212°, d: 10.50 @ 20°.

SYNS:
ARGENTUM SILBER (GERMAN)
C.I. 77820 SILVER ATOM
SHELL SILVER

TOXICITY DATA: 3 CODEN:
mul-rat TDLo:330 mg/kg/43W-I TFX:ETA ZEKBAI 63,586,60
imp-rat TDLo:2400 mg/kg TFX:ETA CNREA8 16,439,56
imp-mus TDLo:11 gm/kg TFX:ETA NATWAY 42,75,55
imp-rat TD:2570 mg/kg TFX:ETA NATWAY 42,75,55
ihl-hmn TCLo:1 mg/m3 TFX:SKN DTLVS* 3,231,71

TLV: Air: 0.1 mg/m3 DTLVS* 4,367,80. *Toxicology Review:* FOREAE 7,313,42; MIBUBI 9(4),321,75; PTPAD4 1,127,76; AJMEAZ 38,409,65; PEXTAR 12,102,69. OSHA Standard: Air: TWA 10 ug/m3 (SCP-N) FEREAC 39,23540,74. Reported in EPA TSCA Inventory, 1980.
THR: An exper ETA. A hmn SKN. See also silver compounds.
Fire Hazard: Mod, in the form of dust, when exposed to flame or by chemical reaction with C_2H_2, NH_3, bromoazide, ClF_3, ethylene imine, H_2O_2, oxalic acid, H_2SO_4, tartaric acid. See also powdered metals.
For further information see Vol. 1, No. 1 of *DPIM Report.*

SILVER ACETYLIDE

mf: C_2HAg; mw: 132.90

THR: No tox data. See also silver compounds.
Explosion Hazard: Very high.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

SILVER AMIDE

mf: AgH_2N; mw: 123.89

THR: No tox data. See also silver compounds. Very explosive when dry.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

SILVER 5-AMINOTETRAZOLIDE

mf: CH_2AgN_5; mw: 191.93

THR: No tox data. See also silver compounds. When heated it explodes.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

SILVER AMMONIUM COMPOUNDS

THR: See silver compounds.
Explosion Hazard: Severe, when shocked, exposed to heat or by chemical reaction.

Disaster Hazard: When heated to decomp it emits tox fumes of Se.

SELENIOUS ACID

CAS RN: 7783008 NIOSH #: VS 7175000
mf: H_2O_3Se; mw: 128.98

Transparent colorless crystals; mp: decomp; d: 3.004 @ 15°/4°; vap press: 2 mm @ 15°. Very sol in alc; insol in ammonia.

TOXICITY DATA:	3	CODEN:
orl-rat LDLo:25 mg/kg		NCNSA6 5,28,53
ipr-rat LDLo:10 mg/kg		NCNSA6 5,28,53
ivn-mus LD50:11 mg/kg		CSLNX* NX#05656

OSHA Standard: Air: TWA 200 ug(Se)/m3 (SCP-X) FEREAC 39,23540,74. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl, ipr, ivn. See also selenium.

Disaster Hazard: When heated to decomp it emits tox fumes of Se.

SELENIUM

CAS RN: 7782492 NIOSH #: VS 7700000
af: Se; aw: 78.96

Steel gray, non-metallic element; mp: 170°-217°; bp: 690°; d: 4.81-4.26; vap press: 1 mm @ 356°.

SYNS:

SELENIUM ALLOY	ELEMENTAL SELENIUM
SELENIUM BASE	SELEN (POLISH)
SELENIUM HOMOPOLYMER	SELENIUM DUST
C.I. 77805	

TOXICITY DATA:	3	CODEN:
orl-mus TDLo:134 mg/kg (MGN)		AEHLAU 23,102,71
orl-mus TDLo:480 mg/kg/ 60D-C:ETA		YMBUA7 11,368,60
ihl-rat LDLo:33 mg/kg/8H		AMIHBC 4,458,51
ivn-rat LD50:6 mg/kg		AMIHBC 4,458,51
unk-frg LDLo:3 mg/kg		PHREA7 23,305,43

TLV: Air: 0.2 mg/m3 (Se) DTLVS* 4,361,80.

Toxicology Review: CTOXAO 6(3),459,73; CTOXAO 5(2),175,72; 31ZNAA 4(3),271,76; JAVMA4 164(3),277,74; CTOXAO 5(2),151,72; IJMDAI 10(4),416,74; JAMAAP 116,562,41; CHREAY 28, 179,41; ADTEAS 5,51,72; PHREA7 23,305,43; FOREAE 7,313,42; KOTTAM 11(11),1300,75; 85CVA2 5,63,70; PEXTAR 12,102,69; BNYMAM 54,413,78; AMTODM 3,209,77. OSHA Standard: Air: TWA 200 ug(Se)/m3 (SCP-X) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 124,181, VOL 3 S190. Reported in EPA TSCA Inventory, 1980.

THR: An exper ETA. HIGH ihl, ivn, unk. See also selenium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Se; Can react violently with barium carbide, bromine pentafluoride, calcium carbide, chlorates, chlorine trifluoride, chromic oxide (CrO_3), fluorine, lithium carbide, lithium silicon (Li_6Si_2), nickel, nitric acid, sodium, nitrogen trichloride, oxygen, potassium, potassium bromate, rubidium carbide, zinc, silver bromate, strontium carbide, thorium carbide, uranium. For further information see Vol. 1, No. 3 of *DPIM Report.*

SELENIUM (COLLOIDAL)

CAS RN: 7782492 NIOSH #: VS 8310000

TOXICITY DATA:	3	CODEN:
ivn-rat LDLo:6 mg/kg		JPETAB 33,270,28

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also selenium and selenium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Se.

SELENIUM COMPOUNDS

THR: HIGH via ivn and inhal routes. An exper carc. Selenium in small amounts is essential for normal growth of some animals. Deficiency or excess is associated with serious disease in livestock. Long-term exposure may be a cause of amyotrophic lateral sclerosis in hmns, just as it may cause "blind staggers" in cattle. Elemental selenium has low acute systemic toxicity, but dust or fumes can cause serious irr of the respiratory tract. Hydrogen selenide resembles other hydrides in being highly toxic, and selenium oxychloride is a vesicant. Some organoselenium compounds have the high toxicity of other organometals. Inorganic selenium compounds can cause dermatitis. Garlic odor of breath is a common symptom. Pallor, nervousness, depression and digestive disturbances have been reported in cases of chronic exposure. Selenium compounds are common air contaminants.

SELENIUM DIMETHYLDITHIOCARBAMATE

CAS RN: 144343 NIOSH #: VT 0780000
mf: $C_{12}H_{24}N_4S_8 \cdot Se$; mw: 559.84

Yellow powd, cryst; d: 1.58; M range: 140°-172°.

SYNS:

METHYL SELENAC	TETRAKIS(DIMETHYLCARBAMODITHIOATO-S,S')SELENIUM

TOXICITY DATA:	3	CODEN:

Carcinogenic Determination: Indefinite IARC** 12, 161,76. *Toxicology Review:* 85CVA2 5,250,70. Reported in EPA TSCA Inventory, 1980.

THR: An exper ± CARC. See also selenium compounds and carbamates.

Disaster Hazard: When heated to decomp it emits very tox fumes of Se, SO_x and NO_x.

SELENIUM (IV) DIOXIDE (1:2)

CAS RN: 7446084 NIOSH #: VS 8575000
mf: O_2Se; mw: 110.96

White to slightly reddish, lustrous crystalline powder or

U.S. DEPARTMENT OF COMMERCE
Lauren B. Hodges, Secretary

WEATHER BUREAU
F. W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

NOTICE
Rainfall-frequency information for durations of 1 hour and less for the Central and Eastern States has been superseded by NOAA Technical Memorandum NWS HYDRO-35 Five to Sixty-Minute Precipitation Frequency for the Eastern and Central United States. This publication (Accession No. PB 272-112/AS) is obtainable from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

THIS ATLAS IS OBSOLETE FOR THE FOLLOWING 11 WESTERN STATES: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOAA ATLAS 2: PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES (GPO: 11 Vols., 1973) supersedes the Technical Paper 40 data for those states.

All but 3 of the 11 state volumes are out of print, and no reprint is presently planned.

Institutions in the eleven western states likely to have copies of these volumes for their state for public inspection are:

US Department of Agriculture Soil Conservation Service Offices
US Army Corps of Engineers Offices
Selected University Libraries
National Weather Service Offices (may also have volumes for adjacent states).
National Weather Service Forecast Offices (may have all eleven volumes)

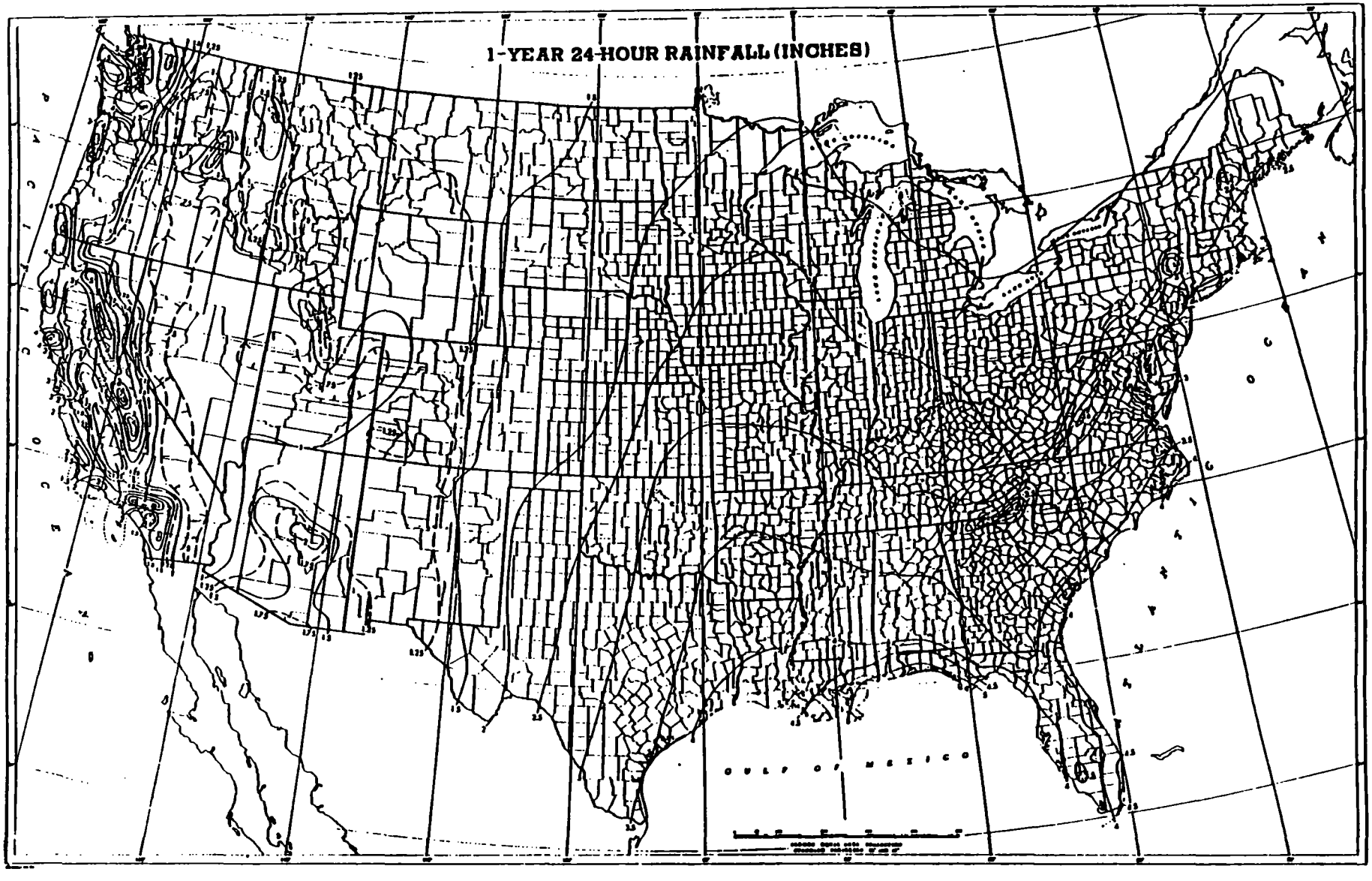
Elsewhere, libraries of universities where hydrology and meteorology degree programs are offered may shelve some of the eleven volumes.

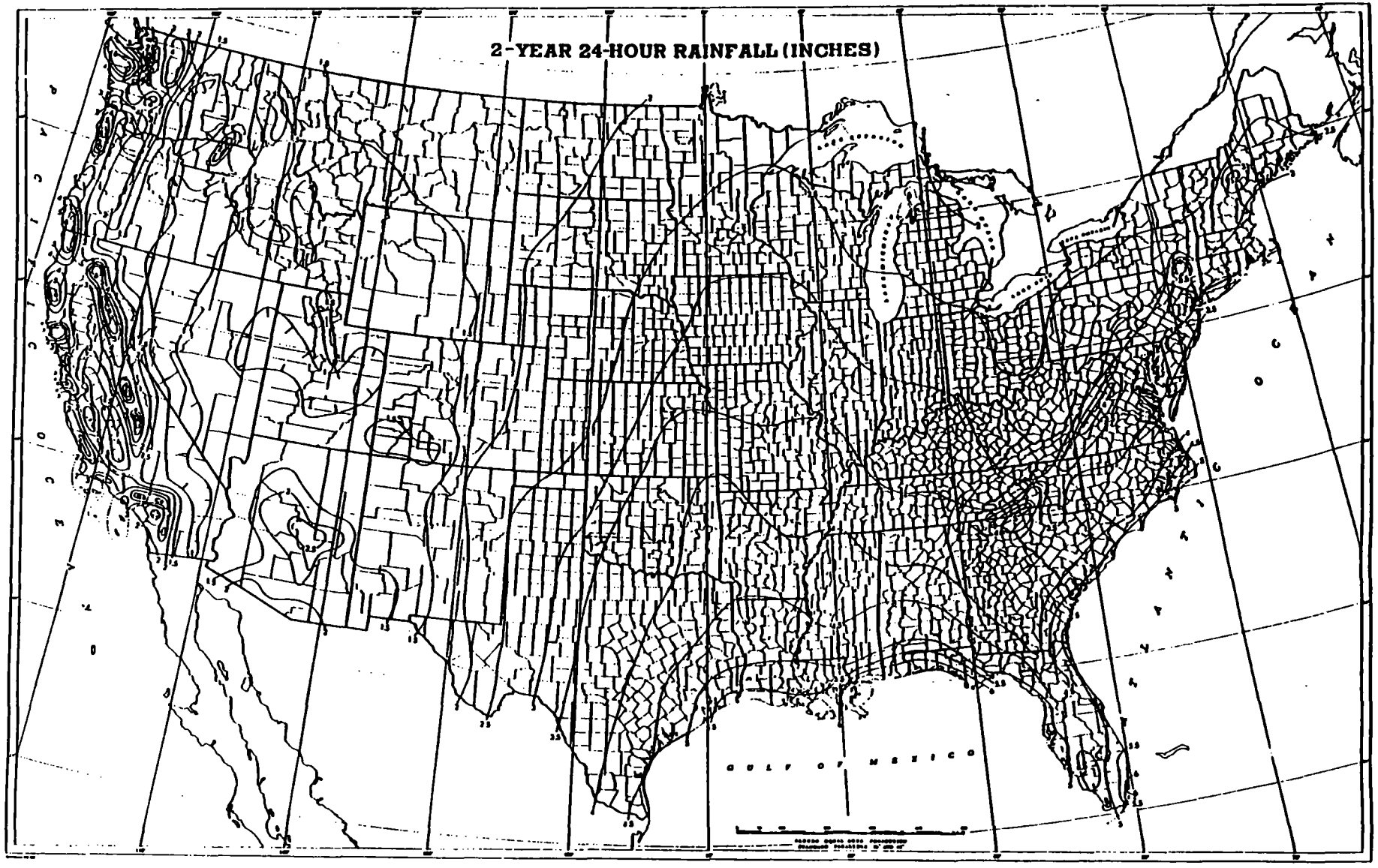
The three volumes in print as of 1 Jan 1983 at the GPO are:

Vol	State	GPO Stock Number	Price
IV	New Mexico	003-017-00158-0	$10.00
VI	Utah	003-017-00160-1	12.00
VII	Nevada	003-017-00161-0	9.50

The GPO Order number is 202-783-3238 for VISA and MASTERCARD orders which

WASHINGTON, D.C.
May 1961


1-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO


2-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO

CME

Reference 5

TWC Reg. No. 31633

TEXAS WATER COMMISSION
Comprehensive GW Monitoring Evaluation (CME) Report

INSPECTION COVER SHEET

C.O.Use Only

EPA ID No. TXD000837369 JUN 0 8 1987 Date Entry Date

NAME OF COMPANY Houston Lighting and Power-Webster

SITE ADDRESS P.O. Box 1700, Houston, Texas Tel (713) 922-2186

COUNTY Harris TYPE OF INDUSTRY Electric Power Generation

Current GW Monitoring Status: Detection Monitoring before Closure.

(Specify for each Waste Management Area "WMA") HL&P is no longer sampling wells

Inspection Information:

Inspector(s) Robert Hahn (TWC) Date(s) 4-24-87

Participants Doug Chin (HL&P), Richard Bye (HL&P)

Type of Inspection (check) EV ___ CME X SA ___

Evaluation:	S	U
A. Monitoring System	X	___
B. Sampling Procedures	X	___
C. Analysis & Results	___	___
D. Records & Response	X	___

Signed: Robert W. Hahn
Inspector
Date: 5-27-87

Signed: Mary L. Ambrose
Reviewer
Date: 6/5/87
PSL - 6/5/87

S= Satisfactory U= Unsatisfactory

Overall Evaluation: Compliant X NonCompliant ___

01/86

TWC Reg. No. 31633

TEXAS WATER COMMISSION
Comprehensive GW Monitoring Evaluation (CME) Report

CONTENTS SHEET

FACILITY NAME Houston Lighting and Power - Webster Generating Station

X 1. Code Sheet (0814)

____ 2. Interoffice Memorandum (IOM)

X 3. Inspection Cover Sheet

X 4. Technical Report, with supporting Attachments

- X A. Monitoring System
- X B. Sampling Procedures
- * C. Analysis and Results
- X D. Records and Response

____ 5. EV Inspection Checklist (if joint inspection with District Office)

____ 6. Notice of Violation (NOV) / Enforcement Letter to Facility

____ 7. Other (describe)_____

* If a required Checklist is omitted, Explain:

* Section will be submitted when results of sample analysis are completed.

01/86

COMPREHENSIVE MONITORING EVALUATION

SUMMARY

The Comprehensive Monitoring Evaluation was conducted at the Houston Lighting and Power Webster Generating Plant on April 24, 1987.

Findings:

The locations of monitor wells installed at the Webster Plant were approved on July 22, 1982 by the Texas Department of Water Resources. The following findings represent deficiencies in the ground-water monitoring program which is no longer in operation due to certified closures of the surface impoundments under an approved closure plan.

1. Background ground-water quality was not properly defined. The upgradient well, MW1, is influenced by water quality from the saline Discharge Canal.

2. All monitor wells appear to have been improperly surveyed or reported incorrectly. Elevations of screened intervals and total depths reported with respect to Mean Sea Level do not take into consideration stick up lengths or ground surface elvations.

3. Total well depth measurements have not been performed to confirm discrepancies noted in various reports.

4. Total Organic Carbon and phenols have not been preserved with acid in the field.

Because of the following: (1) the locations of the monitor wells were approved by the TWC (then the TDWR), (2) the surface impoundments have been certified clean closed and soil and water samples have not confirmed any release, no further action required by the company is warranted. The company should be requested to resolve the discrepancies noted concerning monitor well elevations, total depths, and screened interval elevations for the Central Records files and before approval of the Affidavit of Exclusion.

TWC Reg. No. 31633

TECHNICAL REVIEW
Comprehensive Ground Water Monitoring Evaluation

I. Introduction

A. Company - Houston Lighting and Power Company
Webster Generating Station

1. Process description: Electrical power generation.

2. Plant site has been in operation since: May 1965.

B. Physiography and Climate

1. Site Topography - Attachment A (indicate site location directly on map or reproduction)

Slope <1% to the south.

2. Average Annual:

a. Rainfall - 48 inches
b. Temperature - 69 °F
c. Evaporation - 50 inches

3. Was an annual water balance budget submitted by the company (yes/no)? NO.

4. Surficial Soils Map - Attachment B

a. Soil type - Midland silty clay loam.
b. Soil properties, including permeability, texture, etc. -

The surface impoundments are constructed on Midland Series silty clay loam soils. This soil series consists of multicolored clays which are slightly to strongly acidic, very hard, sticky and plastic. The soil is characterized as having a high to very high shrink swell capacity, high available water capacity, low permeability, poor drainage, and contains some non-intersecting slickensides, few iron, manganese and some calcium carbonate concretions below a depth of 30 inches. Attachment B also presents a table of the soil properties.

5. Proximity to surface water bodies and other recharge/discharge features: The site is adjacent to Clear Creek and 1 mile east of Clear Lake. Two plant water wells screened at 460 and 640 ft. depths exist on-site for use as process water. A cooling water discharge canal which influences water quality in Monitor well MW-1, is located north of MW-1. The distance as indicated on a map is approximately 130 ft. away from MW-1; however, the actual

distance is less than 100 ft. A small ditch full of water is located approximately 15 ft. between MW-1 and the discharge canal. The bank of the discharge canal is approximately 10 ft. higher in elevation in comparison to the ground elevation at MW-1.

6. Proximity to water supply wells:

A survey of water wells located within a 2.5 mile radius of the plant revealed the presence of 152 water wells which included 60 domestic wells, 26 public or municipal wells, 25 wells without documentation, 19 wells no longer in use, 13 industrial wells, 3 water level observation wells, 1 livestock well and 1 service station well. The wells range in depth from 84 to 700 feet deep and are either completed in the Beaumont Aquifer (Upper Chicot) or Evangeline Aquifer (Lower Chicot). Two plant water wells having screen depths of 460 and 640 feet are located within the property boundaries.

C. Waste Management Units:

1. Indicate units on Site Diagram (Attachment C)

2. Indicate waste management area (WMA) boundaries on Site Diagram (Attachment C)

3. Waste management units (complete this section for each waste management unit):

Unit name	- Demineralizer Regenerant boiler blowdown surface impoundment	Inorganic Metal Cleaning Surface Impoundment
Size	- 5'x200'x130' (.794 acres)	4.25'x200'x135'
Year in service	- 1970	1977
Status*	- Closed	Closed
Construction	- 3 ft.compacted clay liner	3 ft. compacted clay liner
Type of waste	- Boiler water	Spent acids from metal cleaning operations.
Total volume of waste received	- Not available.	Not available.

* active, closed, inactive, regulated unit, nonhazardous

Comments:

Both surface impoundments have been certified closed and Affidavits of Exclusion from Hazardous Waste Permitting have been submitted and are currently being processed by the TWC Hazardous and Solid Waste Reports and Management Section. At the time of the CME, the surface impoundments were observed to be full of liquid. HL&P stated that the Demineralizer surface impoundment contained boiler blowdown water also. A third impoundment, known as the Organic Acid Waste pond which is not subject to permit requirements is still in use for storing ammoniated citric acid.

This impoundment is shown on Attachment C as SI-3.

4. If a unit is closing or closed, complete the closure checklist and include as Attachment D.

II. Technical Review

A. Hydrogeology

1. Regional Geology (Houston Sheet, Geologic Atlas of Texas)

a. Physiographic province: Gulf Coastal Plain

b. Formation(s): Beaumont Formation.

1) lithology - fluvial-deltaic clays and silts.
2) regional dip and gradient - <2 ft/mile for the Beaumont. towards the Gulf of Mexico.

c. Usable quality (<10,000 TDS) ground water

1) depth to top/bottom - Top: 84 ft. reported for a domestic well drilled in 1971 for domestic use. Bottom: 2900;
2) reference - Baker (1979, TDWR 236).

d. Regional ground water flow:

1) direction - toward the Gulf although in the vicinity of the Webster Plant, the direction is toward the northwest as a result of the pumping of large quantities of groundwater in the Houston District.
2) reference - Baker (1979, TDWR 236).

e. Is the site located on the recharge area of a major/minor named aquifer (yes/no)? NO.

f. Part B Permit Application, Geology Report, pages: Section 8.

g. If a Part B Application was submitted, does it request a waiver from ground-water monitoring (yes/no)? NO. waiver rejected 3-82.

Comments: The site is located on interdistributary areas of fluvial dominated deltaic plains. The sediments are clay dominated and represent overbank flooding deposition. Subsidence in the Webster plant area has been reported at 7 feet since 1906.

2. Site Hydrology

a. Site Diagram - Attachment E (include locations of waste management area(s), borings, wells, lines of cross-sections)

b. Depth to water - 6 to 14 feet below ground surface level. As determined by - water level measurements in monitor wells.

c. Site stratigraphy to depth of investigation -1000 ft. (complete this section for each encountered unit)

Stratigraphy as determined from plant borings (Surface to 80 ft.). Attachment F presents electric log interpretations for the 2 on-site plant water wells to a depth of 1000 ft.

Unit	-	Clay
Depth encountered	-	Surface to 30 ft.
Description	-	Surface to 5 ft: Soft to very stiff dark brown clay often varying to yellowish brown or reddish brown in color below a depth of 1 foot, observed to contain calcareous and ferrous nodules, roots, gravel, shells, and occasional sand or silt lenses in the upper 5 feet. It is not considered a separate unit. 5 to approx. 20 ft: Multicolored clay varying from brown, tan, reddish brown, light gray, observed to consist of calcareous and ferrous nodules and generally skickensided within the 8 to 13 ft. interval. 18 to 23 ft: Reddish brown clayey to sandy silt varying from 1 to 4 ft. in thickness. Observed to contain sand pockets. 23 to 30 ft: Stiff brown to tan clay.
Thickness	-	30 ft.
Saturated thickness	-	approximately 20 feet.
Confined/unconfined	-	Water table; presence of water thought to be due to seepage from the cooling water discharge canal.
Potentiometric rise	-	N/A

Comments: Below a depth of 30 feet, the stratigraphy directly beneath the surface impoundments has not been defined. However, plant borings approximately 1000 feet away possibly project a 15 foot tan colored sand at a depth of 40 feet beneath the impoundments. The sand appears to have a geometry similar to a crevase splay deposit (Assessment Report, 5-29-84). From a depth of 60 to 80 feet, plant boring CB-1 revealed a 15 foot thick red and gray silty clay overlying a gray and tan sandy clay. At this same depth interval, CB-11 encountered a "calcium shell marl." No data is available for the 80 to 100 ft. interval.

Plant water well electric logs reveal a 20 ft. sand at a depth of 100 ft. followed by an interbedded sequence of sand and clay to a depth of 250 ft. From 250 ft. to approximately 450 ft depth, the sediments appear to be predominantly clay rich. A 120 ft. sand , which is screened in Plant water well #2, is present at a depth of 500 feet. The base of this thick sand represents the base of the Chicot Aquifer. Approximately 300

ft. of interdistributary clayey sediments isolates this sand from another 100 ft. thick sand located at a depth of 900 ft. This sand is considered part of the Evangeline Aquifer.

d. Hydraulic conductivity to depth of investigation - (complete this section for each encountered unit)

Unit	- Clay, 3 ft.	Clay, 7 ft.	Sandy Silt 22-27 ft. 23-28 ft.
Hydraulic conductivity	- 1.2-6.3 10^{-9} c/s	1.4-1.0 10^{-9} c/s	1.02 10^{-3} c/s
Type of test	- Falling head-lab	Falling head-lab	Slug test
Number of tests	- 2	2	2
Range of values	- As shown	As shown	1.5 10^{-4} to 2.7 10^{-3} cm/s.

e. Cross-sections - Attachment G

f. Is first water-bearing zone identified in c. above in communication with deeper zone(s) (yes/no)? It has not been determined.

g. Is the aquitard(s) continuous beneath the site (yes/no)? Uncertain from available data. Clayey sediments vary from sandy to silty clay beneath the site.

h. If yes for f. and g. above, calculate rate of downward vertical migration from upper aquifer to lower on Attachment and list results here:

Rate - Can not be determined.
Aquitard thickness -
Migration time -

Comments:

3. Site Ground Water Movement

a. Potentiometric Surface Map(s) - Attachment H (indicate inferred flow directions directly on map. Include several maps to show range of observed water level measurements.)

b. Calculate minimum and maximum observed gradients (i) in units of feet/foot. Show on Attachment H (above) and list here:

i_{min} - 0.001 ft/ft.

i_{max} - 0.022 ft/ft.

c. Calculations of average linear velocity (v) for gradients reported above, showing all assumptions, Attachment I

v_{min} - 0.44 ft/year using i=0.001, K=1.5 10^{-4} cm/s

v_{max} - 176 ft/yr. using i=0.022, K=2.7 10^{-3} cm/s

Comments:

Included in the Part B, the Ground-water quality assessment report determined a velocity of 6 ft/year using a gradient of 0.0017, K ave=1.02 10^{-3} cm/s and porosity = 30 %. This value is within an expected range for velocities reported in the Beaumont Clay (5-20 ft/yr.). The min and max values for the gradient (i) were determined from two separate 3 point problems involving different sets of 3 out of the 4 monitor wells. The maximum velocity determined in this CME using a K=2.7 10^{-3} cm/s appears to be high for the Beaumont Clay. Using a maximum gradient of 0.022 and K=1.5 10^{-4}, a velocity of 9.75 ft/yr is calculated which also falls within an expected range. Using a 3 point problem, gradients of 0.022 and 0.021 were obtained from water level measurements collected on 4-24-87 (CME) and 4-19-85, respectively. The limited number of data points (4) and the possible mounding around the surface impoundments do not allow for a more precise velocity calculation to be performed. In addition, water levels determined on 12-14-83 showed the water elevation in the canal at 12.82 ft. and in MW-1 at 10.53 which indicates that the canal is probably a recharge feature. As shown on the water elevation maps, wide contour intervals which represent a flatter gradient are located between the canal and MW-1,-2, and -4. This flat gradient area may be due to a recharge mound located around the discharge canal. A steeper gradient is indicated toward MW-3 and another canal. The second canal known as the intake canal may represent a discharge feature. The TWC Cross-Section (Attachment G) shows the water table sloping toward MW3 and the intake canal. No water level measurements or chemical characteristics are available for the intake canal.

5. Monitor Well Construction

   a. Well Construction Diagrams - Attachment J

   b. Table of Well Construction Details - Attachment K

   c. Do monitor well installation and development techniques and materials of construction satisfy the requirements of 31 TAC 335.112(a)(5)/40 CFR 265.91(c) (yes/no)? NO . If no, explain in comments.

Comments:

Monitor wells at the Webster Plant have been either incorrectly surveyed and/or total well depths have been improperly reported. Several discrepancies have been found in the various reports incorporated into the Part B. The following table lists data presented in the reports as well as field data

collected during the CME. As shown, total depths from the three sources of data do not agree. Based on the general lithological descriptions and the positions of the screens, the Assessment Report dated 5-29-84 may be the most valid. Wells were resurveyed from the top of casing as part of the Assessment Plan dated October 1983. No ground level elevations or stick up lengths were reported.

Substantial Siltation: As shown in the table below, an expected decrease in total well depth which would indicate siltation of the well is not indicated when measurements taken during the CME are compared to the 5-29-84 reported data. The reference point used to determine the T.D. in the 7-22-82 data is not clear; however, the well construction diagram presented as Attachment shows the reference point as the ground surface level. The increase noted in total depth measurements may be due to: (1) incorrect measurements with respect to top of casing in the Part B reports; (2) collapse of the well. The wells were likely drilled to a depth of 30 feet as indicated from the lithological descriptions.

A high degree of siltation in the wells is indicated from the appearance of purged water from the wells. Initial bailer volumes of the purged water were clear. Siltation and turbidity seemed to increase with continued purging until only a very small volume of water was able to be evacuated from the wells. After waiting approximately 10 minutes, purging of the well was resumed. Clear water was noted again in the first bailer volume. It might be invisioned that the clear water noted might represent water recharging into the well from the very top of the well screen at a slow enough rate that the incoming water did not disturb the silt buildup in the well. Following removal of the first bailfull, the silt in the well was disturbed. The selection of a 0.020 inch slot size may not have been appropriate for the clayey sediments.

TOTAL DEPTH OF WELL (T.D.) TOC=Top of Casing GSL= Ground Surface Level

	CME T.D. from TOC	Assessment Rpt 5-29-84 (TOC)	Installation Rpt 7-22-82 (GSL ?)	Lithology 7-22-82
MW-1	23.49 ft	21	28	0 - 25 ft, clay 25- 29 ft, silty clay with sandy silt
MW-2	31.84 ft	28	29	0 - 12 ft, clay fill 12- 24 ft, clay 24- 27 ft, with silt seams 27- 30 ft, clay
MW-3	N.T.	29	28	0 - 21 ft, clay 21- 22 ft, interbedded with silt
MW-4	N.T.	28	21	0-17.5 ft, clay 17.5-19.5, sandy silt 19.5-30ft, clay

7. Monitor Well Placement

a. Upgradient/background monitor well(s)

1) Confirmed as upgradient [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(1)] (yes/no)? NO, see comments.

2) Adequate to yield samples that are representative of background water quality [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(1)(i)] (yes/no)? NO, see comments.

3) Unaffected by the WMA [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(1)(ii)] (yes/no)? YES, see comments. Indicate distance(s) of upgradient well(s) from the WMA: 500 ft.

Comments: The upgradient well MW-1 is not influenced by the WMA (i.e., surface impoundments). However, MW-1 is strongly influenced in water quality by the discharge canal. A comparison of conductivity data collected on 12-14-83 is shown below:

Sample	Conductivity umhos/cm
MW-1	12,000
Canal	14,000
MW-2	1,600
MW-3	3,200
MW-4	3,000

b. Downgradient/perimeter monitor wells

1) Confirmed as downgradient and provide for immediate detection of hazardous waste or hazardous waste constituents that migrate from the WMA [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(2)] (yes/no)? NO . If no, explain in comments. Indicate on Site Diagram, Attachment E above, lateral spacing of downgradient wells.

2) Describe operator's justification for lateral spacing: HL&P states that they have complied with TAC 335.112 by installing a background well and 3 down gradient wells. Only 4 wells were installed because the surface impoundments are in close proximity to each other.

3) Is the lateral spacing sufficient to satisfy the performance standard of 31 TAC 335.112(a)(5)/40 CFR 265.91(a)(2) (yes/no)? YES.

4) Indicate on Site Diagram, Attachment E, and tabulate below the distances of downgradient wells from the edge of the WMA in the direction of ground-water flow:

Well	MW-2	MW-3	MW-4	
Distance	50 ft.	100 ft.	150 ft.	
Velocity	6 ft/yr	6 ft/yr	6 ft/yr	-assumption using
Time	8.3	16.7	25	HL&P data

Calculate ground-water travel time based on the average linear flow velocity, v (calculated in II.A.4. above). Assuming conservative transport, indicate with (*) those wells that will not detect contaminates during the active life or post-closure care period of the WMA.

Comments:

Monitor wells MW-2 and MW-4 appear to be lateral to ground water flow. Limited number of data (4 wells) do not allow for a more defendable determination of ground-water flow directions. The downgradient wells appear to be located too far from the WMA's. According to the time calculations above, and assuming operation of the units began in 1977, any impact upon the groundwater would not be noticeable until after the Affidavit of Exclusion is granted.

c. Vertical placement - Indicate on cross-sections (Attachment G) the screened and gravel-packed intervals of wells and tabulate below:

Well	Screen Length	Gravel Pack Interval	Aquifer Thickness	S/U*
MW-1	5 ft	10-21 ft.	2 ft.	S
MW-2	5 ft	18-28 ft.	2 ft.	S
MW-3	5 ft	18-29 ft.	3 ft.	S
MW-4	5 ft	18-29 ft.	4 ft.	S

*Explain in comments why vertical placement is unsatisfactory [31 TAC 335.112(a)(5)/40 CFR 265.91(c)]

Comments: The length of screen and gravel pack may be satisfactory for the selected monitored interval. However, it appears from plant borings located over 1000 feet away from the surface impoundments that a more appropriate zone for monitoring may be, if present, a 15 foot sand or clayey sand located at a probable depth of 40 ft. below the ground surface.

B. Sampling Procedures

Since HL&P is no longer sampling the monitor wells on a regular basis, facility sampling was not able to be observed. Instead, procedures used by the company during sampling were reviewed during a phone interview with Doug Chin, HL&P.

1. Facility Sampling Plan

   a. Is a Sampling Plan [31 TAC 335.112(a)(5)/40 CFR 265.92(a)] maintained at the facility (yes/no)?YES. Include a copy as Attachment L

   b. Does the plan address the following items (yes/no)?

      1) sample collection procedures - Yes
      2) sample preservation and shipment - Yes
      3) analytical procedures - Yes
      4) chain of custody procedures - Yes

   c. List deficiencies/omissions/recommended changes:

      Labels should contain mode of preservation; the Plan should specify measurements of temperature and specific conductivity to be conducted in the field; the decontamination procedure for bailers is inadequate; the Plan should specify preserving TOC and phenols with acid following sample collection; the Plan should specify the periodic determination of total well depth; the Plan should specify the collection of field blanks or equipment blanks if dedicated bailers are not used for each well.

   d. Does the facility follow the plan during sampling events (yes/no)? NO. If not, describe inconsistencies between the plan and observed sampling procedures:

      The types of bottles used are different than as specified in the Plan; the Plan specifies field filtering prior to preserving metal samples; the COC form specified in the plan is not used; the Plan specifies a preference to use dedicated bailers.

2. Are wells equipped with (yes/no):

   a. Caps - Yes
   b. Lockable caps - No, screw on caps.
   c. Annular seals - Yes (to prevent contamination from surface sources)

Comments: The Plant is surrounded by a fence with controlled access.

3. Describe water level and total well depth measurement equipment and techniques: Total depth measurements have not been performed since the 5-29-84 determination. Water level elevations are performed on each well prior to purging using a rope with weight attached and graduated every 2 feet. The weight is used to "sound" the water level. A ruler graduated in 0.10 ft. increments is used to refine the measurement.

4. Well evacuation

   a. Describe well evacuation equipment and techniques: A PVC bailer is used to evacuate the well. Three casing volumes are purged from the well. The total depth of well used in the calculations is obtained from data in the 1984 Assessment Report.

   b. Describe collection and disposal methods of bailed water: . Is the observed disposal method appropriate (yes/no)? YES. The purged water is emptied into a larger bucket which is then emptied at some distance away from the well.

   c. If the same equipment is used to evacuate each well, describe decontamination procedures: YES, distilled water is used to rinse the bailer.

5. Sample collection

   a. Describe the sample collection equipment and techniques: A PVC bailer is used to sample the well. Sample containers are filled directly from the bailer.

   b. If the same equipment is used to sample each well, describe decontamination procedures: Distilled water is used to rinse the bailer.

   c. Indicate the order in which samples are taken:

      1) Non Preserved samples
      2) preserved samples

6. Field analytical procedures

   a. Complete the following table for each field analysis;

Parameter	Elapsed time*	Instrument	Field/ On-site lab
pH	?	Orion Model 611	Well Head
Conductivity	?	Lee & Northrop # 486	On-site lab

*between sample extraction and parameter analysis

   b. Describe field filtration equipment and techniques: None.

   c. Parameters filtered: None, samples are filtered in the contract lab.

7. Complete the following table for the facility's sampling program:

Container	Preservative	Parameters	S/U*
1 liter glass	ice	Ground water quality	S
1 liter glass	ice, nitric	Metals	S

*Explain in comments why the program is unsatisfactory

Comments: Table 7 is applicable for samples collected 4-24-87 during the CME.

8. Is the observed sampling methodology adequate for (NA/yes/no):

a. Indicator parameters - No, TOC and phenols should be preserved. Conductivity should be measured at the well head.
b. Quality parameters - Yes
c. Drinking water parameters - Yes
d. Metals - Yes, however, the company should have considered field filtering due to the very silty nature of the water.
e. Volatile organics - N/A
f. Floating immiscible organics - N/A
g. Dense immiscible organics - N/A

9. Describe Quality Assurance/Quality Control (QA/QC) procedures used in the facility's sampling program:

a. QA/QC at on-site lab - Equipment is not standardized on a frequent basis.

b. Field calibration of instruments - Only occasional calibration is performed.

c. Duplicate and/or spiked samples and blanks - None.

d. (Other)

10. Chain of Custody (C.O.C.) procedures:

a. Describe C.O.C. and shipping procedures: Label is equivalent to the COC tag. Sampler hand carries samples to the contract lab (Analytical Petroleum Research, APR, Dickinson, Texas). The samples are packed in ice.

1) Example of C.O.C. Form or Tag - Attachment Not Available.

2) Example of Sample Identification Tag or Label - Attachment ~~Not available~~. 1-2

3) (Other)

b. Do the C.O.C. and shipping procedures minimize the possibility of tampering with the samples (yes/no)? Yes

11. TWC co-sampling of monitor wells - complete the following if monitor wells are co-sampled with the facility operator:

    a. Person(s) who collected samples for:

       Facility - Doug Chin

       TWC - Robert Hahn

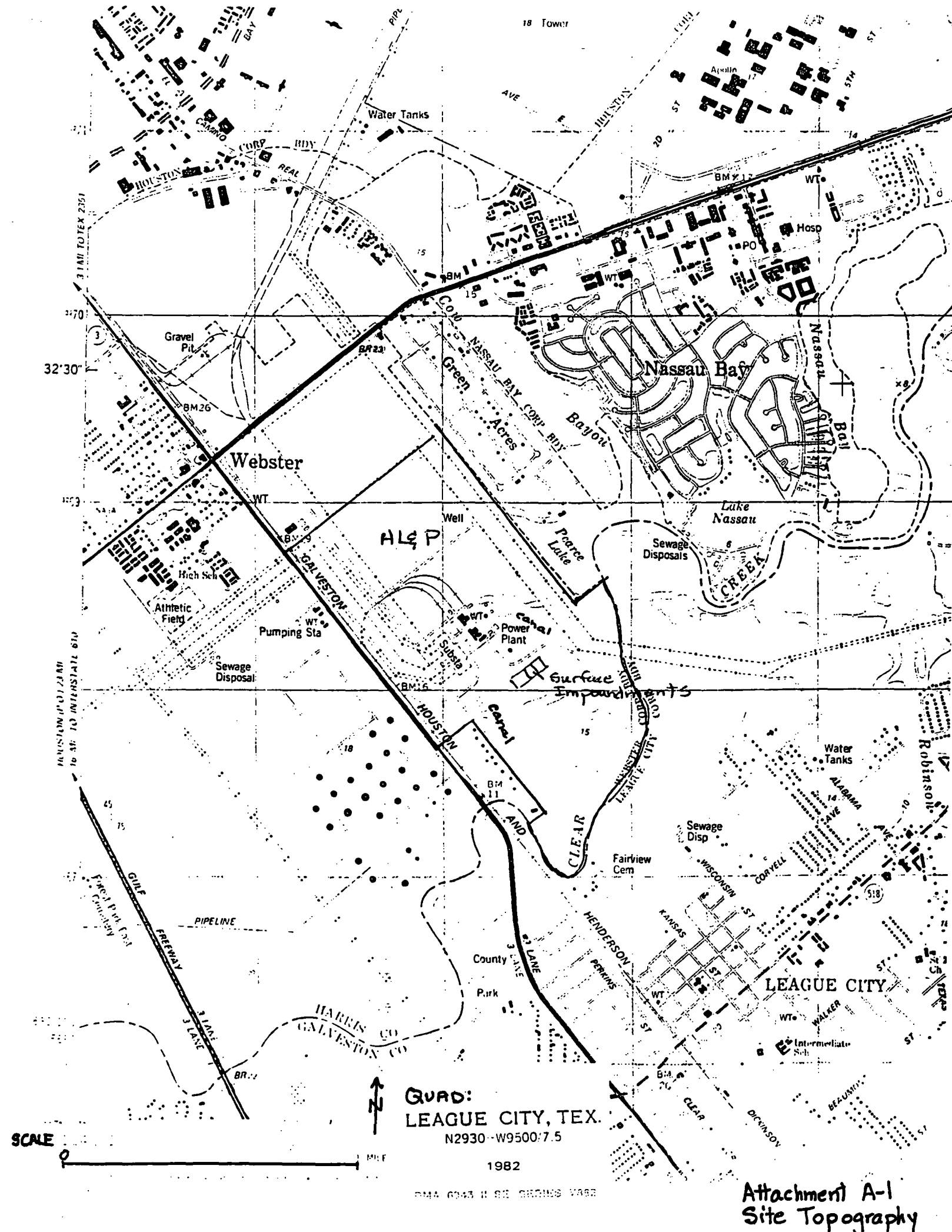
    b. Number of wells co-sampled - 2
       Total number of RCRA wells - 4

    c. TWC Sample Schedule - Attachment M

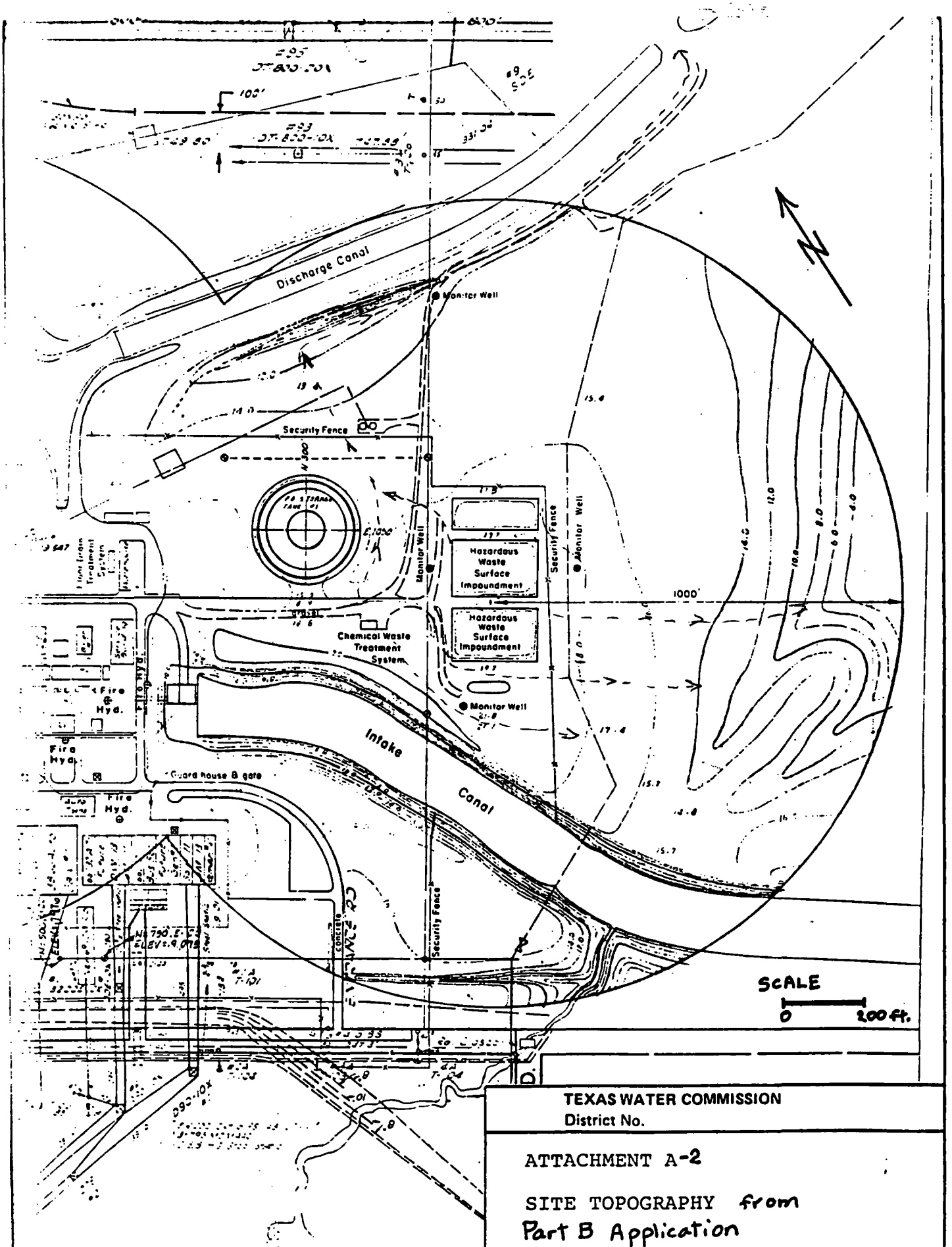
    d. TWC Field Notes - Attachment N

III. Response

A. List, in chronological order, activities, events and correspondence relating to groundwater monitoring in Attachment O.



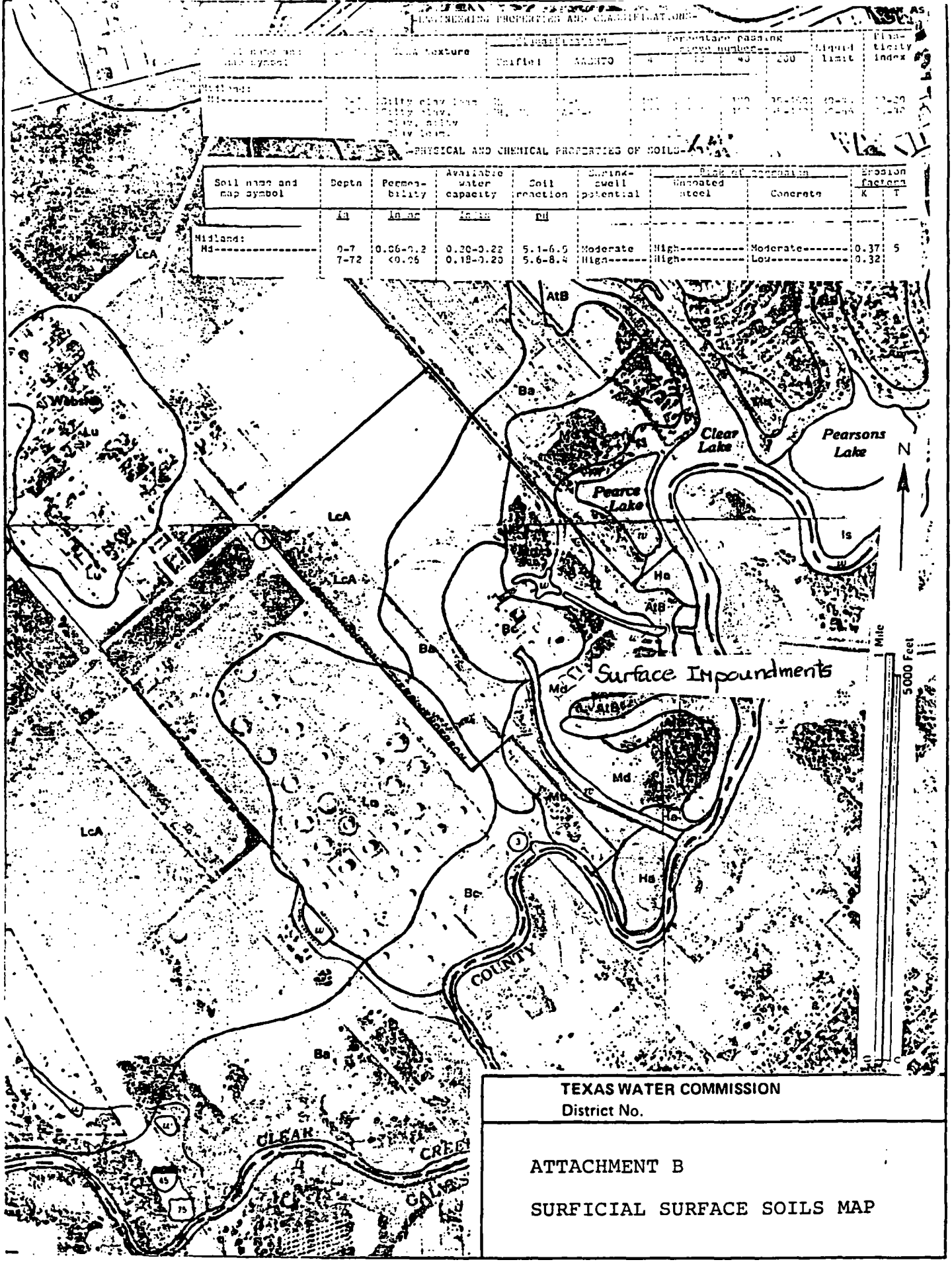
Attachment A-1
Site Topography



TEXAS WATER COMMISSION
District No.

ATTACHMENT A-2

SITE TOPOGRAPHY from Part B Application



PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T
	In	In/hr	In/in	pH					
Midland:									
Md	0-7	0.06-0.2	0.20-0.22	5.1-6.5	Moderate	High	Moderate	0.37	5
	7-72	<0.06	0.18-0.20	5.6-8.4	High	High	Low	0.32	

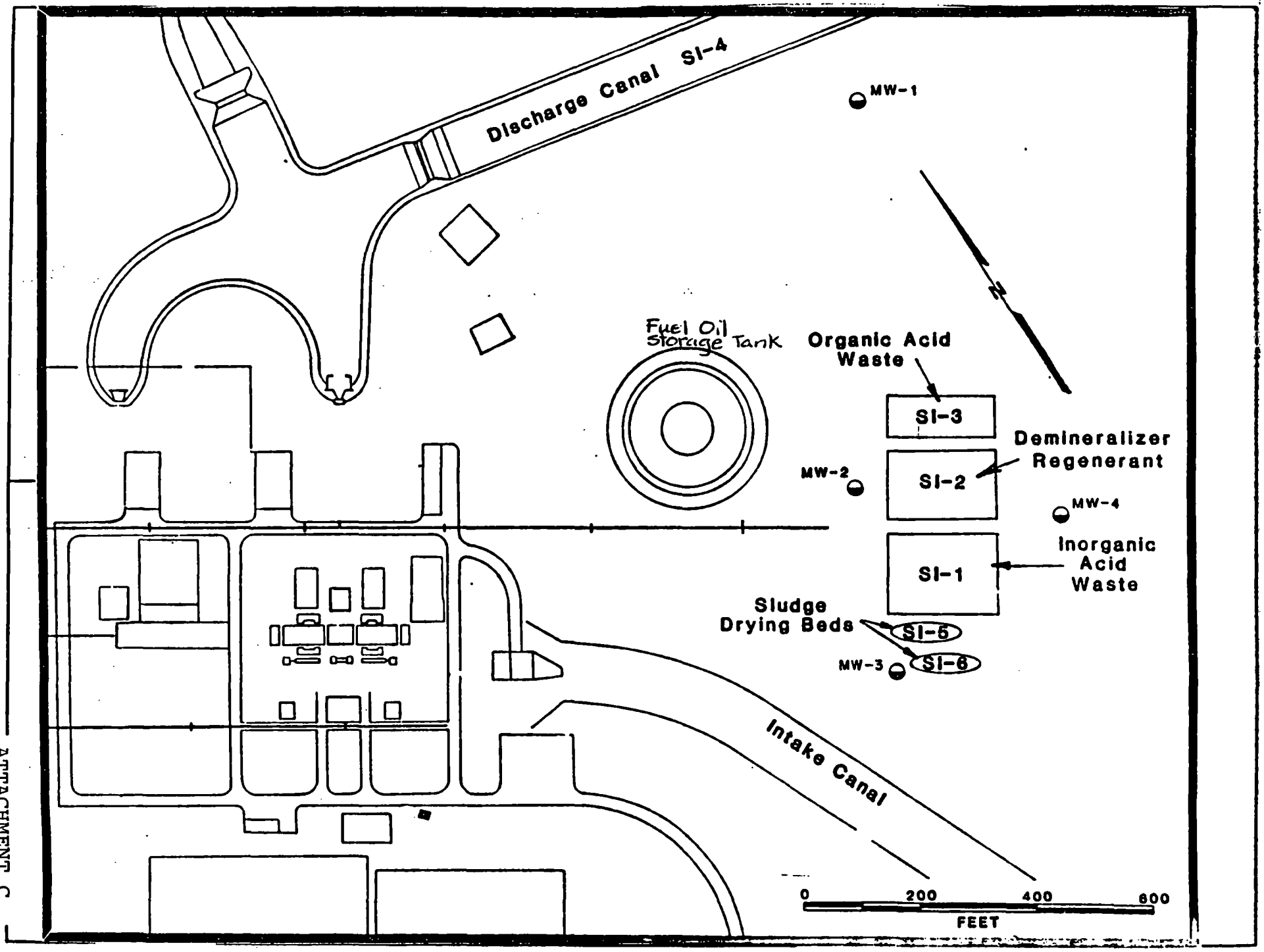
TEXAS WATER COMMISSION
District No.

ATTACHMENT B

SURFICIAL SURFACE SOILS MAP

TWC 0636 (Rev. 09-01-85)

TWC-0636 (Rev. 09-01-95)



ATTACHMENT C

LOCATION OF WASTE MANAGEMENT UNITS

Attachment 17.

TWC Solid Waste Inspection Report

TWC Reg. No. 31633

CLOSURE-in-PROGRESS CHECKLIST

Reg. Facility No. ___

Type of facility component: Surface Impoundments(2)

1. Is the facility component being closed a RCRA unit? YES X NO ___

2. Type of closure: Full-Facility Closure X Partial Closure ___ ***

3. Has **closure plan** received TWC approval or final modification? N/A ___ YES X NO ___
   Date of approval: August 6, 1985
   Sept. 25, 1986

4. Is this the last on-site facility to be closed which requires RCRA groundwater monitoring? N/A ___ YES X NO ___

5. Has an approved **public notice** of closure been published? N/A ___ YES X NO ___
   Date published: April 3, 1985

6. Is a **public hearing** required? YES ___ NO X
   Date of hearing: N/A

7. Has on-site closure work started? YES X NO ___
   Date work initiated: June 17, 1986 (Demin)
   Sept 19, 1985 (Inorg)

8. Is closure work proceeding according to the work schedule in the approved closure plan? N/A ___ YES X NO ___

9. Have 180 days elapsed since TWC approval of the closure plan? N/A ___ YES ___ NO X

   a. If Yes, Has TWC approved an extension period? N/A ___ YES ___ NO ___

10. Was District Office notified of sampling event when complete removal (clean closure) of a Land Disposal facility was to have been accomplished? N/A ___ YES X NO ___

11. Were **TWC samples** taken to verify completion of closure? YES X NO ___

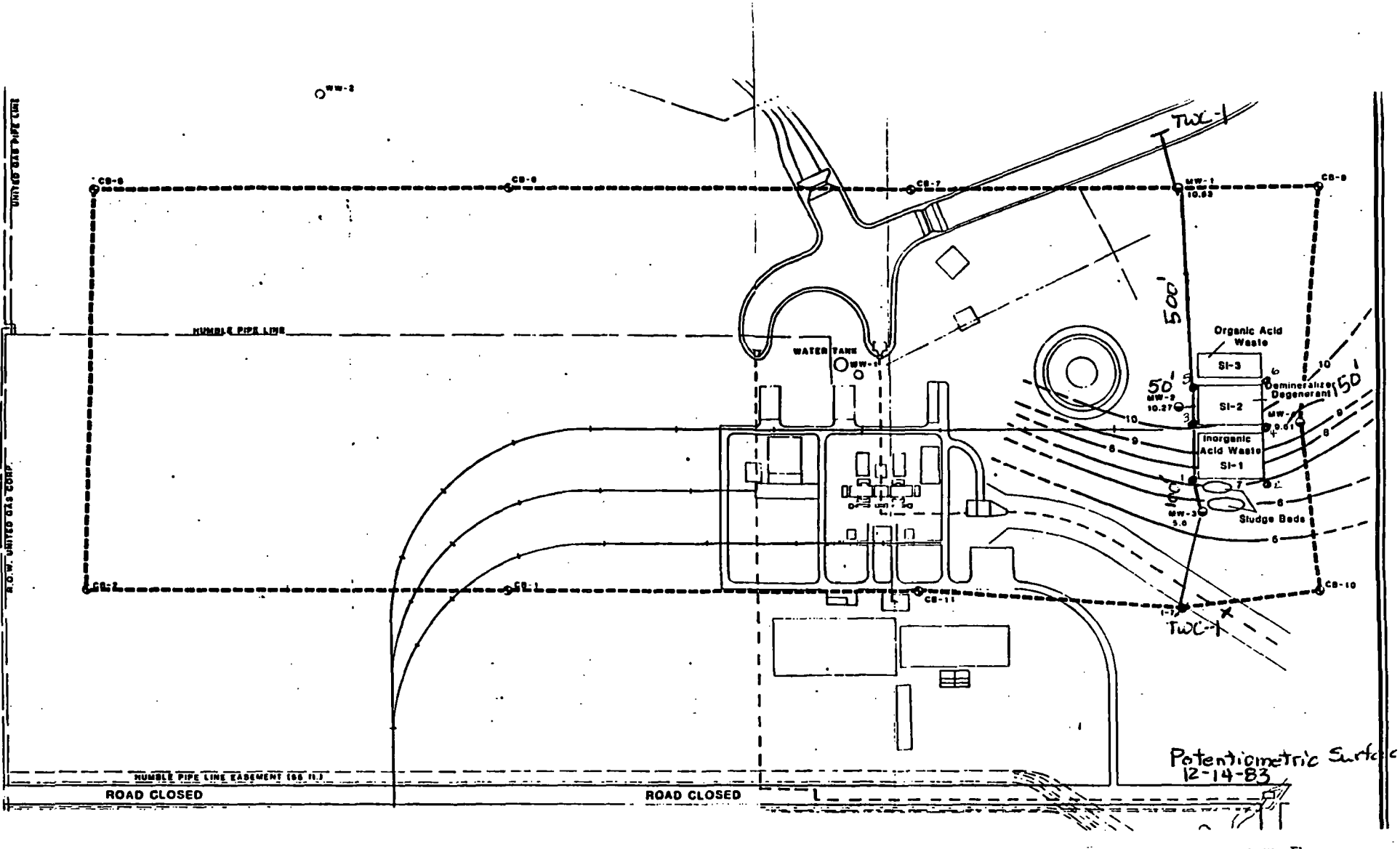
    NOTE: List chain-of-custody sample tag numbers in comments.
    TWC was available SW12329, 12328
    12-23-86

12. Is the closure work **completed**? YES X NO ___
    Date of completion: Nov. 1985
    July 1, 1986

13. Has the closure **certification** been submitted to TWC? N/A ___ YES X NO ___
    Attach copy or explain. Date of certification: September 2, 1986
    Demin.
    Inorganic - Nov. 1985.

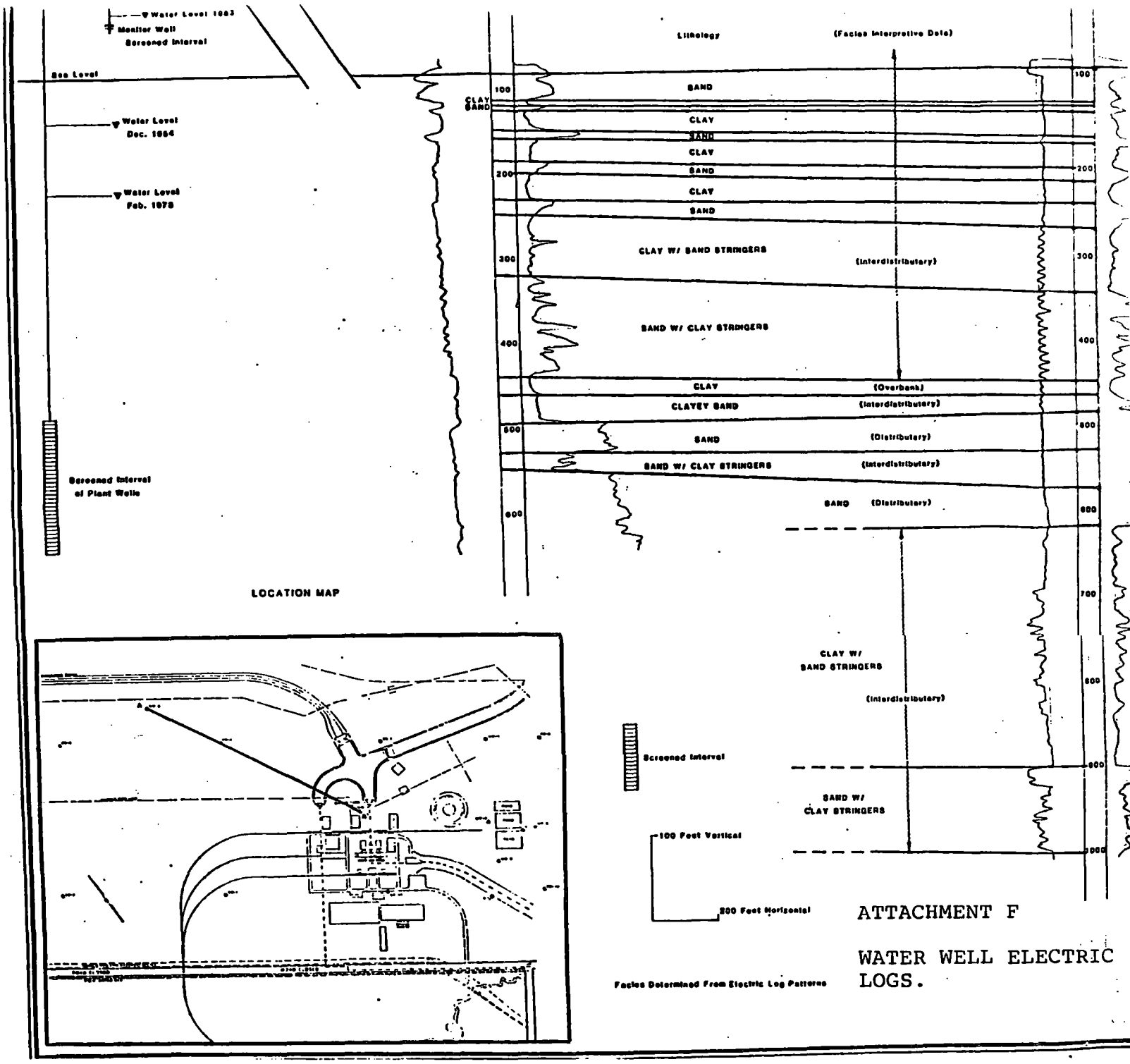
*** An entry in this column indicates explanation/response is needed.

09/86



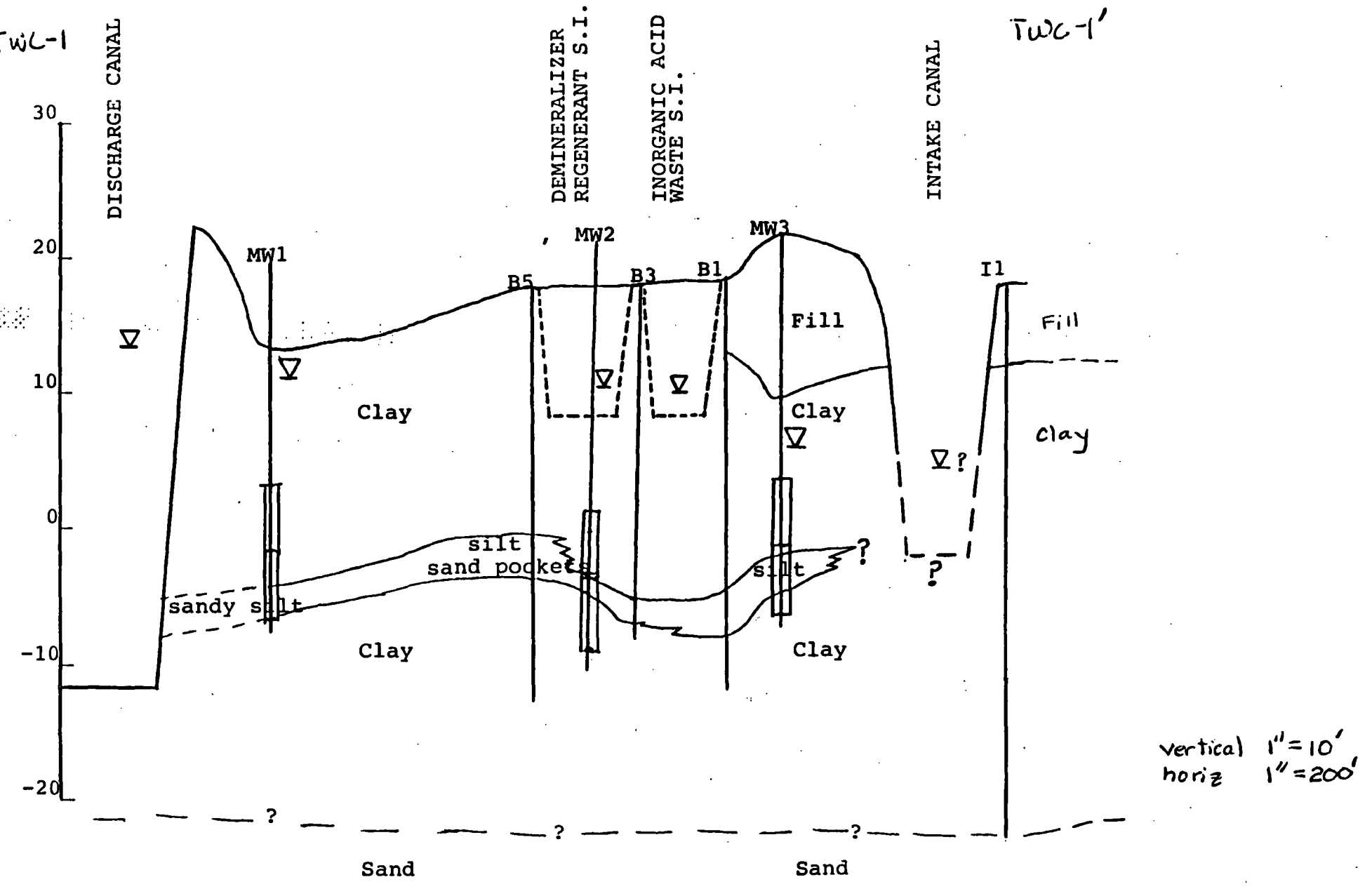
ATTACHMENT E

SITE DIAGRAM. LOCATION OF WELLS, BORINGS AND CROSS_SECTIONS.



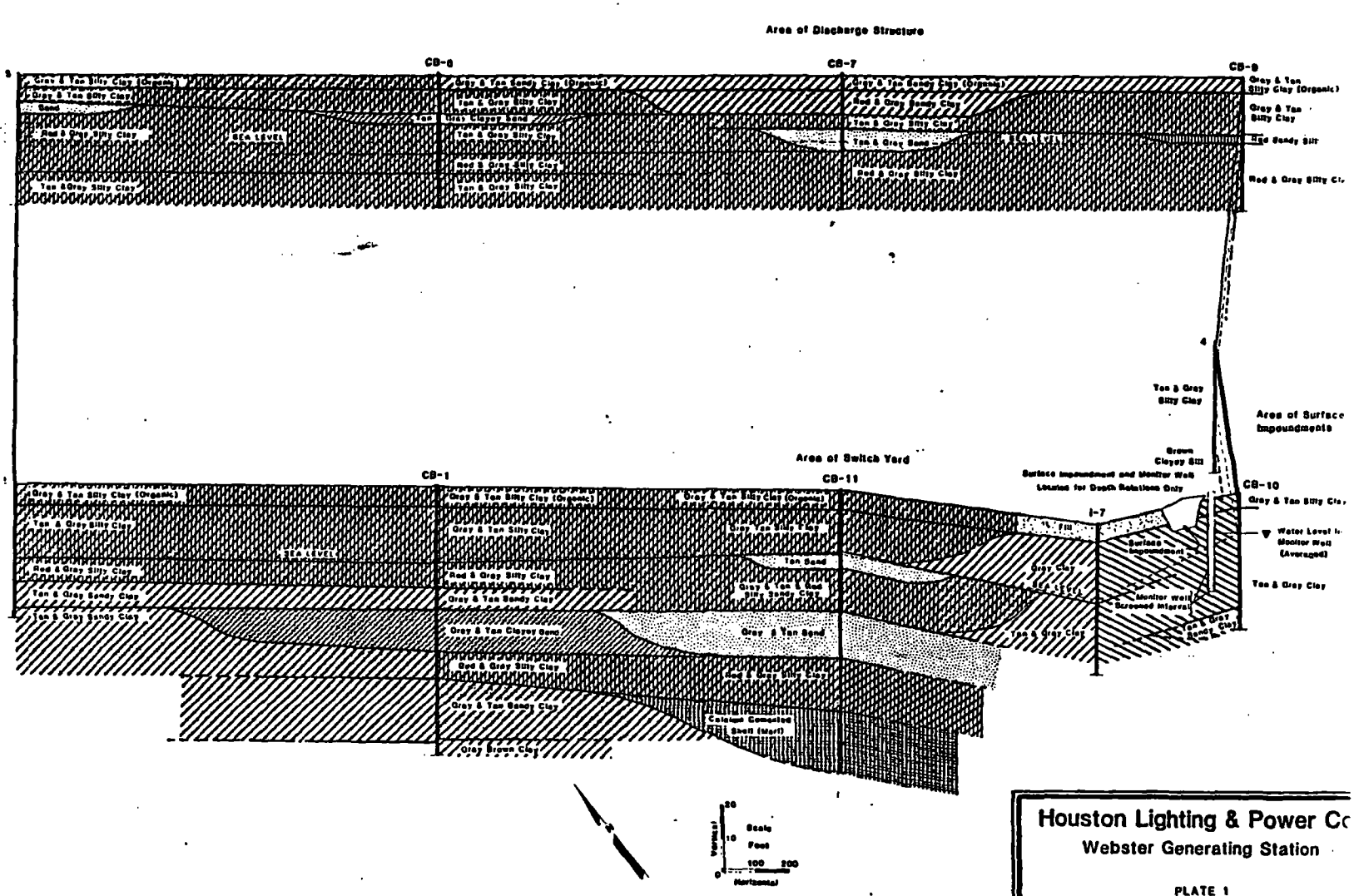
ATTACHMENT F

WATER WELL ELECTRIC LOGS.



ATTACHMENT G

CROSS-SECTION SHOWING MONITOR WELLS, BORINGS LOCATIONS OF SURFACE IMPOUNDMENTS AND CANAL



Houston Lighting & Power Co

Webster Generating Station

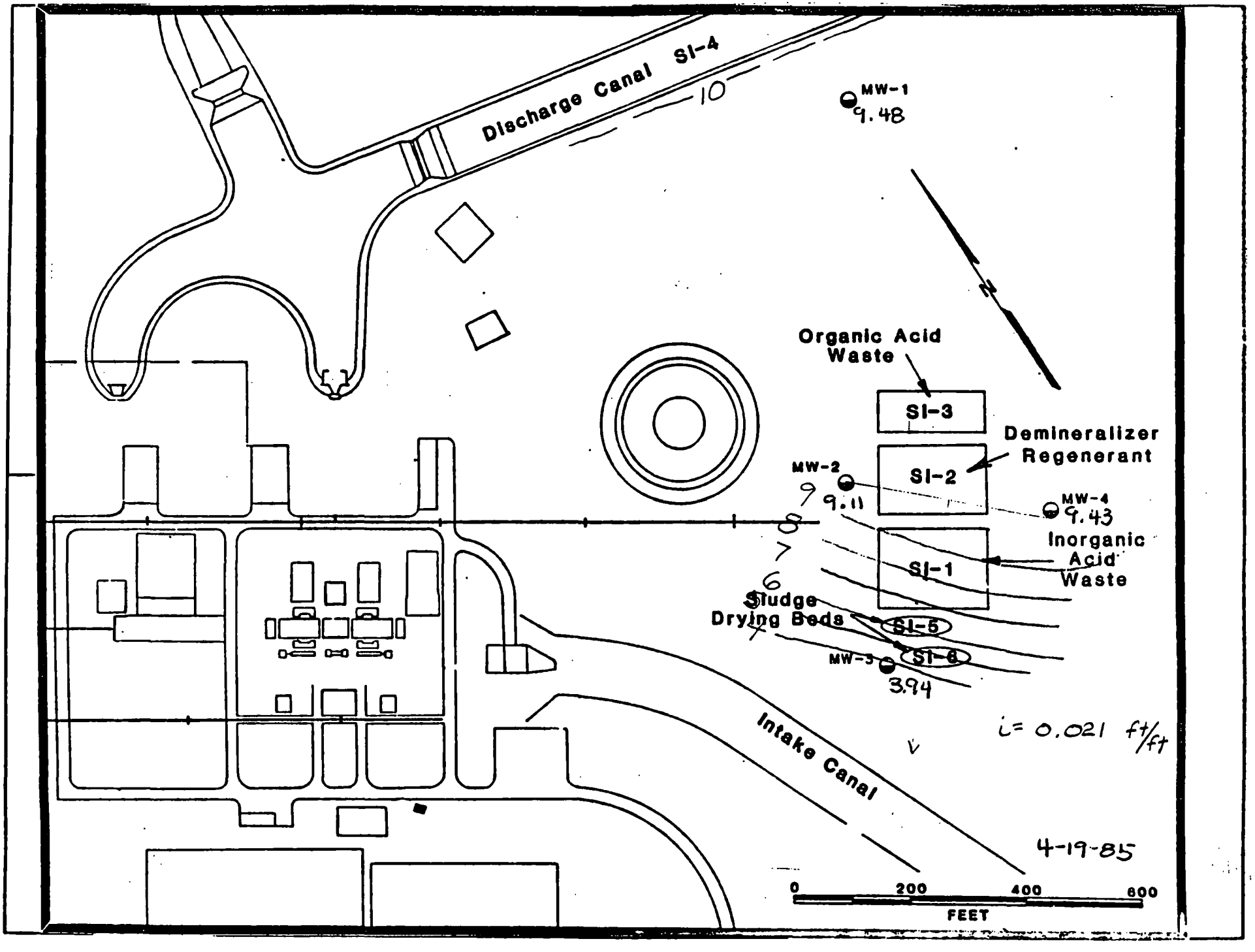
PLATE 1

LITHOLOGIC CROSS SECTION

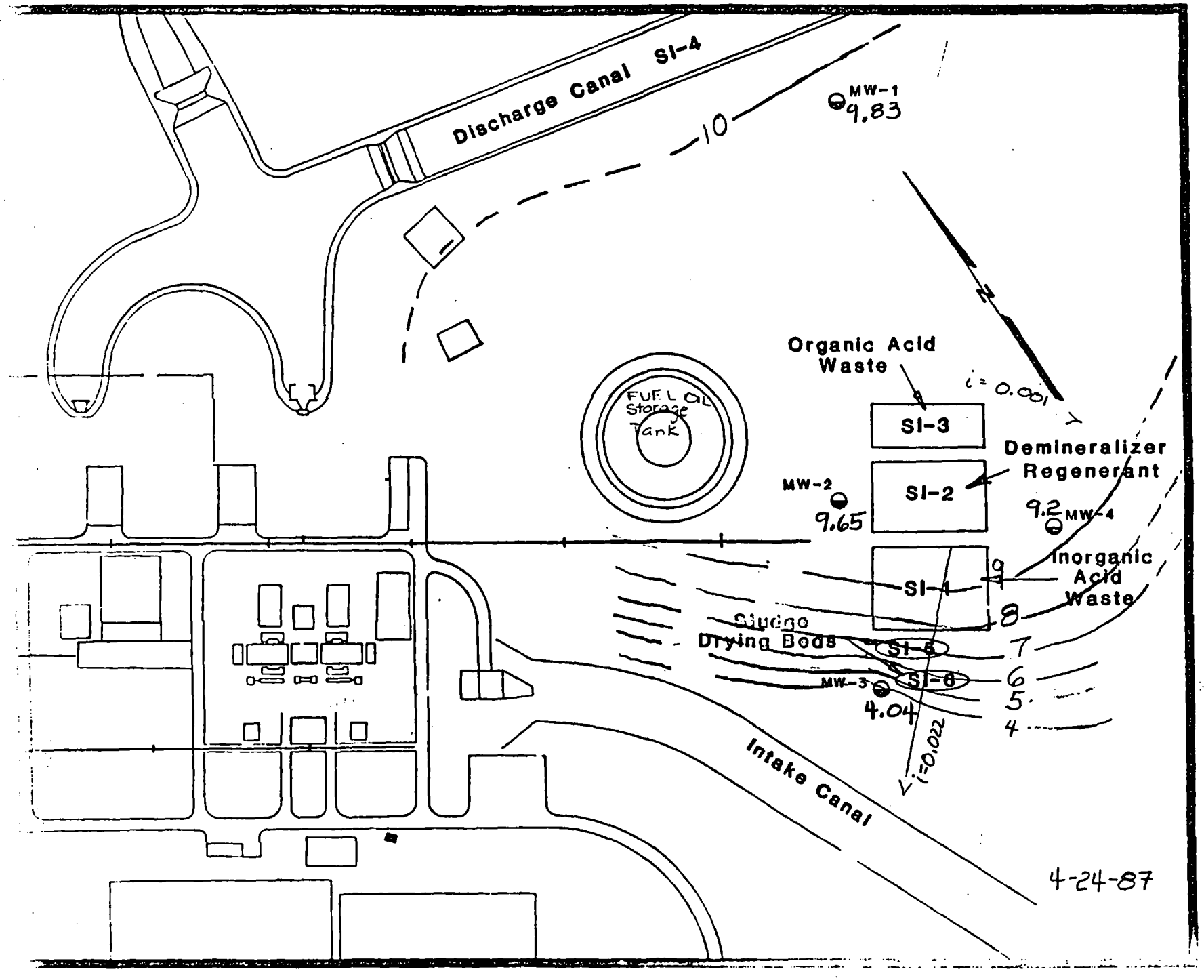
Date Prepared: 4/28/94

Prepared by
Underground Resource Management, Inc.
Austin, Texas

ATTACHMENT G
COMPANY CROSS_SECTIO



ATTACHMENT H
POTENTIOMETRIC SURFACE MAP



ATTACHMENT H
POTENTIOMETRIC SURFACE
MAP.

Calculations of Average Linear Velocity

Assumptions Let $K = 1.5 \times 10^{-4}$ cm/s slug test in MW-2
$\phi = 35\%$ porosity, from assumptions made in HL&P Part B for Gulf Coast clayey sediments

For $i = 0.001$ ft/ft

$$V = \frac{K i}{\phi} = \frac{1.5 \times 10^{-4} \text{ cm/s} \cdot 0.001 \text{ ft/ft}}{.35} \times 1.0348 \times 10^{6} \frac{\text{ft/yr}}{\text{cm/s}}$$

(Fudge Factor)

$V = 0.44$ ft/yr

For $i = 0.022$ ft/ft

$V = 9.75$ ft/yr

Assumptions Let $K = 2.7 \times 10^{-3}$ cm/s slug test in MW-3
$\phi = 35\%$ porosity

For $i = 0.001$ ft/ft

$V = 7.98$ ft/yr

For $i = 0.022$ ft/ft

$V = 175.6$ ft/yr

TEXAS WATER COMMISSION District No.
ATTACHMENT I CALCULATIONS OF LINEAR VELOCITY

TABLE 7

Monitor Well Data
Webster Generating Station

Measurement	Monitor Well No. 1	Monitor Well No. 2	Monitor Well No. 3	Monitor Well No. 4
Location (Local Flow)	Updip	Downdip	Downdip	Downdip
Top of Casing Elevation (ft. MSL)	19.48	21.11	21.94	21.43
Total Depth (ft.)	21	28	29	28
Total Depth (ft. MSL)	-1.52	-6.89	-7.06	-6.57
Screened Interval (ft. below ground level)	15 - 20	22 - 27	23 - 28	22 - 27
Screened Interval (ft. MSL)	4.48--0.52	-0.89--5.89	-1.06--6.06	-0.57--5.57
Static Water Level (12/17/83) (ft. below casing point)	8.95	10.84	16.34	11.92
Static Water Level (12/17/83) (ft. MSL)	10.53	10.27	5.6	9.51
Associated Surface Impoundments*	Discharge Channel	SI-2	SI-1	SI-1, SI-2, and SI-3
Surface Impoundment Water Levels (12/14/83) (ft. MSL)	12.82	11.19	10.02	10.02/11.29/10.41

*See Figure 13 for Surface Impoundment Location

These may not be correct.

ATTACHMENT J
WELL CONSTRUCTION DIAGRAMS.

Reference 6

File III A

TWC Reg. No. 31633

TEXAS WATER COMMISSION
Solid Waste Compliance Monitoring Inspection Report

C.O. Use Only

INSPECTION COVER SHEET

JAN 05 1987 | 01-87 | LLS

TWC Dist. 7

EPA ID No. TXD000437369 COMMERCIAL WASTE Facility___ GOVT. Facility___

NAME OF COMPANY Houston Lighting & Power (Webster Station)

MAILING ADDRESS P.O. Box 1700 Houston 77001 Tel (713) 922-2217

SITE LOCATION 19301 Old Galveston Rd Tel.

COUNTY Harris TYPE OF INDUSTRY electrical generating station

GENERATOR CLASSIFICATION: Industrial ✓ Municipal___

Part A Application submitted to the State ? Yes ✓ No___ To EPA ? Yes ✓ No___
Affidavit of Exclusion submitted to the State ? Yes ✓ No___
Was a written exclusion granted by TWC? Yes___ No ✓ If yes, Date _____
Will this facility require a RCRA permit? Yes___ No ✓

CURRENT WASTE MANAGEMENT (Haz.-"H", Class I NonHaz.-"NH", Class II-"II", Class III-"III")

Generator H, NH, II Treatment_____ Storage_____ Disposal_____ Transporter_____

HW Exemptions: 90-Day Storage ✓ Other WWT

SQG___: Total HW Generation Per Month: <100 kg.___ 100-1000 kg.___

H W Facilities (circle appropriate codes): (C) T (SI) WP LT LF I TT TR WDW O

N H Facilities (circle appropriate codes): (C) T (SI) WP LT LF I TT TR WDW O

Anomalies in the above information will be addressed by: (a) Enforcement in progress ___, (b) Central Office ___, (c) District Office ✓, (d) Owner/Operator ___.

Type of Inspection (circle): EV ER EC CL GW (SA) CD FO OT FE SQ SW

Inspector's Name and Title Paula Thetford, Hazardous & Solid Waste Specialist

Inspection Participants Barbara Dorf - HL&P

Date(s) of Inspection 7-1-86

Approved: Sandra A. Parker for District Manager Trinity Rivers Signed: Paula R. Thetford Inspector 10-21-86 Date

TWC Reg. No. [redacted]

TEXAS WATER COMMISSION
Solid Waste Inspection Report
CONTENTS SHEET

COMPANY NAME Brenntag Southwest - Houston

✓ 1. Code Sheet (Ø814)

✓ 2. Inspection Cover Sheet

____ 2b. Special Insp. Cover Sheet (HB.2358)

____ 3. Generators Checklist

____ 3b. Small Quantity Gen. Checklist

____ 4 General Facilities Checklist

____ 5. Transporters Checklist

*6. Component Facility Checklists

____ A. Containers (C)
____ B. Tanks (T)
____ C. Surface Impoundments (SI)
____ D. Waste Piles (WP)
____ E. Land Treatment (LT)
____ F. Landfills (LF)
____ G. Incinerators (I)
____ H. Thermal Treatment (TT)
____ I. Chemical, Physical, or Biological Treatment (TR)
____ J. Other (O)

____ 7. Closure/Post-Closure Checklist

____ 7b. Closure-In-Progress Checklist

____ 8. Groundwater Monitoring Checklist Group

____ 9. Notice of Violation (NOV) Letter

____ 1Ø. Interoffice Memorandum (IOM)

____ 11. Registration

____ 12. Maps, Plans, Sketches

____ 13. Photographs/Slides

✓ 14. Other (describe) sample results from closure of surface impoundment

* If a required Checklist is omitted, explain: Closure-in-Progress checklist has been previously submitted.

Ø5/86

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : Russ Kimble, Chief, Reports and Management Section, Hazardous and Solid Waste Division
DATE: December 23, 1986

THRU : Luis Campos, Hazardous & Solid Waste Coordinator, Field Operations Division

FROM : Paula Thetford, Hazardous and Solid Waste Specialist, Deer Park Office

SUBJECT: Houston Lighting & Power - Webster Station
ISW Reg. No. 31633

On July 1, 1986, a closure inspection was conducted at a surface impoundment at HL&P - Webster Station. Two composite samples were taken; the results of which are tabulated below:

SW 12329: pH=7.0

EP-tox metals	(ug/l)
Arsenic	11.5
Barium	326
Cadmium	18
Chromium	<8
Lead	<10
Mercury	0.2
Selenium	20.1
Silver	2

SW 12328: pH=7.6

EP-tox metals	(ug/l)
Arsenic	5.4
Barium	390
Cadmium	10
Chromium	16
Lead	12
Mercury	<0.2
Selenium	22.4
Silver	6

This information is provided for file data.

Signed: Paula R. Thetford

Approved: Ken Kramer

TK/PRT/amh

TEXAS DEPARTMENT OF WATER RESOURCES TDWR 0849

District 7 Org. No. 331 Work No. 9091 Lab TRA

NO. SW 12329

Site Name HL & P Webster Station

Site Location 19301 Old Galveston Rd
Webster 77001

County Harris Basin 1101

Method of Collection The 3-part composit was ~~taken~~ taken using a clean metal scoop to place the sample in an untreated glass jar w/a teflon liner

Point of Collection Demineralizer Regenerant / Boiler Blowdown Surface Impoundment - Clay liner 18" beneath surface

Type facility: ☐ Drum; ☐ Tank; ☒ Impoundment; ☐ Landfill; ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 11:30 (0 ppm) Date Shipped

Add. COC #s

ODOR; ☐ Yes; ☒ No; Describe

S.W. Registration	Permit Number	Page No.	Date	
1 9	10 N/A 18	19 21	22 23 24 25 26	27 28 29
3 1 6 3 3			B 0 7 0 1 8 6	E

Paula R. [illegible]
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
					I.D. OPEN

TEXAS DEPARTMENT OF WATER RESOURCES TDWR-0849

NO. SW 12329

District 7 Org. No. 331 Work No. 9091 Lab TRA

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments The sample was taken 18" beneath the surface is a 3-part composit

(continued on back)

Lab Only — Date rec'd: 7-3-86; completed: 8-28-86; (Lab No) 86-3818-02

Analyst sign.: [illegible]

Preservation: ☐ None; ☐ Ice; ☒ H_2SO_4; ☐ HNO_3; Other

Auxiliary Tags

☒ LEACHATE: EP Toxicity Series; TDWR

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH		EP-tox series			
00403	7.0				
COD		ARSENIC EPTOX ug/L		LEAD EPTOX ug/L	
00340		01002	11.5	01051	<10
TOC		BARIUM EP TOX ug/L		MERCURY EP TOX ug/L	
00680		01007	326	71900	0.2
GC/MS		CADMIUM EP TOX ug/L		SELENIUM EP TOX ug/L	
		01027	18	01147	20.1
		CHROMIUM EP TOX ug/L		SILVER EP TOX ug/L	
		01034	<8	01077	2

TEXAS DEPARTMENT OF WATER RESOURCES TDWR-0849

NO. SW 12328 District 7 Org. No. 331 Work No. 9091 Lab TRA

Site Name H2GP - Webster Station

Site Location 19301 Old Galveston Rd
Webster 77001

County Harris Basin 1101

Method of Collection The 4-part composite sample was taken using a clean metal scoop to place the clay in an untreated glass jar with a teflon lined lid.

Point of Collection Demineralizer Regenerant / Boiler Blowdown Surface Impoundment Clay Liner - 2-4" beneath surface

Type facility: ☐ Drum; ☐ Tank; ☑ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 11:30 (a.m.) pm) Date Shipped

Add. COC #s

ODOR: ☐ Yes; ☒ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Type (22)	Date Mo. (23 24)	Date Day (25 26)	Date Yr. (27 28)	Item # (29)
3 1 6 3 3	N/A		B	0 7	0 1	8 6	E

Paula R. [illegible] (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
					FIELD OPERAT[illegible]
					[illegible]EAST R[illegible]

TEXAS DEPARTMENT OF WATER RESOURCES TDWR-0849

NO. SW 12328

District 7 Org. No. 331 Work No. 9091 Lab TRA

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments The sample was taken 2-4" from surface & is a 4-part composit

(continued on back)

Lab Only — Date rec'd: 7-3-86; completed: 8-28-86; 86-3817-02 (Lab No); Analyst sign.: [illegible]

Preservation: ☐ None; ☑ Ice; ☐ H_2SO_4; ☐ HNO_3; Other

Auxiliary Tags

☑ LEACHATE: ☑ EP Toxicity Series: TDWR

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH 00403	7.6	EP-tox series		LEAD EP TOX mg/l 01051	12
COD 00340		BARIUM EP TOX mg/l 01007	390	MERCURY EP TOX mg/l 71900	<0.2
TOC 00680		ARSENIC EP TOX mg/l 01002	5.4	SELENIUM EP TOX mg/l 01147	22.4
GC/MS		CADMIUM EP TOX mg/l 01027	10	SILVER EP TOX mg/l 01077	6
		CHROMIUM EP TOX mg/l 01034	16		

Reference 7

File III A
TWC Reg. No. [illegible]

RECEIVED
JUL 21 1986
ENFORCEMENT AND FIELD OPERATIONS

TEXAS WATER COMMISSION
Solid Waste Compliance Monitoring Inspection Report

INSPECTION COVER SHEET

C.O. Use Only
0786

TWC Dist. 7

EPA ID No. TXD000837349 COMMERCIAL WASTE Facility ___ GOVT. Facility ___

NAME OF COMPANY Houston Lighting & Power - Webster Station

MAILING ADDRESS P.O. Box 1700 - W.E. McGuire, Houston TX 77001 Tel (713) 922-2186

SITE LOCATION 19301 Old Galveston Rd, Webster Tel. ___

COUNTY Harris TYPE OF INDUSTRY electrical generating station

GENERATOR CLASSIFICATION: Industrial ✓ Municipal ___

Part A Application submitted to the State ? Yes ✓ No ___ To EPA ? Yes ✓ No ___
Affidavit of Exclusion submitted to the State ? Yes ___ No ✓
Was a written exclusion granted by TWC? Yes ___ No ✓ If yes, Date ___
Will this facility require a permit ? Yes ___ No ✓

CURRENT WASTE MANAGEMENT (Haz.-"H", Class I NonHaz.-"NH", Class II-"II", Class III-"III"

Generator H, NH, II Treatment II Storage II, NH, II Disposal ___ Transporter ___

HW Exemptions (check): 90-Day Storage ✓ Other WW Treatment
(when facility closure is complete)
*SQG ___ :Total HW Generation Per Month: <100 kg. ___ 100-1000 kg. ___

H W Facilities (circle appropriate codes): (C) (T) (SI) WP LT LF I TT TR WDW O

N H Facilities (circle appropriate codes): (C) T (SI) WP LT LF I TT TR WDW O

Anomalies in the above information will be addressed by: (a) Enforcement in progress ___
(b) Central Office ___, (c) District Office ___, (d) Owner/Operator ___.

Type of Inspection (circle): (EV) EB EC CL GW SA CD PO OT FE SQ SW

Inspector's Name and Title Paula Thetford, Hazardous & Solid Waste Specialist

Inspection Participants Richard Bye, Barbara Doof, Debbie Peters, Richard Parham - HL&P

Date(s) of Inspection 7/9/86

Approved: [signature] District Manager Signed: Paula R Thetford Inspector (SA) 7/14/86 Date

* SQG- Small quantity generator, <1000 kg. of hazardous waste per month.

TWC Reg. No. 1162

TEXAS WATER COMMISSION
Solid Waste Inspection Report
CONTENTS SHEET

COMPANY NAME: Houston Lighting & Power-Webster

✓ 1. Code Sheet (0814)

✓ 2. Inspection Cover Sheet

____ 3. Special Inspection Cover Sheet (HB.2358)

✓ 4. Generators Checklist

____ 5. Small Quantity Generator Checklist

✓ 6 General Facilities Checklist

*7. Component Facility Checklists

- ✓ A. Containers (C)
- ____ B. Tanks (T)–part of the WW Treatment System
- ____ C. Surface Impoundments (SI)
- ____ D. Waste Piles (WP)
- ____ E. Land Treatment (LT)
- ____ F. Landfills (LF)
- ____ G. Incinerators (I)
- ____ H. Thermal Treatment (TT)
- ____ I. Chemical, Physical, or Biological Treatment (TR)
- ____ J. Other (O)

____ 8. Closure and Post-Closure Checklist ____ Closure-In-Progress Checklis

____ 9. Groundwater Monitoring Checklist ____

✓ 10. Notice of Violation (NOV) Letter

____ 11. Interoffice Memorandum (IOM)

____ 12. Registration

✓ 13. Maps, Plans, Sketches

____ 14. Photographs/Slides

____ 15. Other (describe) ____

* If a required Checklist is omitted, explain: The groundwater monitoring checklist is omitted because groundwater monitoring will cease (upon facility closure in 2-3 weeks), as stated and approved in the facility closure plan.

01

TWC Solid Waste Inspection Report

TWC Reg. No. [illegible]

GENERATORS CHECKLIST

Section A - Notification and Waste Determination (335.6, .62, .63)

***

1. Has generator completed an appropriate hazardous waste determination for each solid waste produced? YES ✓ NO ___

2. Check the method used for determination :

   a. Listed as a hazardous waste in 40 CFR Part 261, Subpart D. ___
   b. Process or materials knowledge. ✓
   c. Tested for characteristics as identified in 40 CFR Part 261, Subpart C (If equivalent test method is used, attach a copy). ___

NOTE: If a hazardous determination has not been made or appears to be incorrect, the inspector should obtain a sample of the waste for analysis and explain in comments.

3. Has the facility received an EPA ID number? N/A ___ YES ✓ NO ___

4. Is notification of waste streams generated correct? YES ✓ NO ___

5. Do all waste management (TSD) methods in use agree with Registration? YES ___ NO ✓

6. Does this facility generate, treat, store, or dispose of PCB wastes? YES ___ NO ✓
   If yes, describe storage and disposition:

7. Does this facility generate **used oils** ? YES ✓ NO ___
   If yes, describe storage and disposition:

   Waste oils (Class I and II) are stored in a 500 gallon tank located in the containers storage area.

8. Does this facility generate **spent solvents** ? YES ✓ NO ___
   If yes, describe storage and disposition:

   Spent solvents are drummed and shipped to Rollins.

9. Does this facility utilize **sumps** in the management of hazardous waste? If yes, describe use: YES ___ NO ✓

*** An entry in this column indicates corrective action/response is needed

Section B - Special Conditions (335.75)

***

1. If generator has received from or transported to a **foreign** entity any hazardous waste, has the appropriate notice been filed with the EPA Regional Administrator? N/A ✓ YES ___ NO ___

2. Was the waste manifested and signed by the foreign consignee? N/A ✓ YES ___ NO ___

3. Has confirmation of waste transport out of the country been received by the generator? N/A ✓ YES ___ NO ___

Section C - Recordkeeping and Reporting (335.9, .10, .13, .70-71)

1. Does the generator maintain the following records and reports (if applicable) for the necessary three years?

a. Shipping Manifests	N/A ___	YES ✓	NO ___
b. Monthly off-site shipment summaries	N/A ___	YES ✓	NO ___
c. Monthly on-site land disposal summaries	N/A ✓	YES ___	NO ___
d. Monthly waste receipt summaries	N/A ✓	YES ___	NO ___
e. Tests and analyses	N/A ___	YES ✓	NO ___
f. Annual reports	N/A ___	YES ✓	NO ___

2. Has generator submitted **exception reports** to TWC for any original (white) copies of manifests not received back? N/A ✓ YES ___ NO ___

3. Have any spills, unauthorized discharges or threats of such discharges occurred? YES ✓ NO ___

   If yes, have they been reported?(335.4, .453) N/A ___ YES ___ NO ✓

   Have they been remedied?(335.453) Explain. N/A ___ YES ✓ NO ___
   see comments

+++ IF GENERATOR DISPOSES OF WASTES ON-SITE ONLY, WRITE N/A IN SECTION D+++

Section D - Pretransport and Manifest Requirements (335.61-68)

1. Identify primary off-site disposal facilities:

   BFI, Rollins

2. Are off-site disposal facilities permitted or operating under interim status standards? N/A ___ YES ✓ NO ___

3. Are TWC manifests properly completed? N/A ___ YES ✓ NO ___

++++ STOP & SIGN HERE IF FACILITY QUALIFIES AS A SMALL QUANTITY GENERATOR ++++

Signed: _____

Section D - (Continued)

4. Do containers used to hold waste(s) meet DOT **packaging requirements** (49 CFR Parts 173, 178, 179) before being offered for transport (if circumstances observed)? N/A ✓ YES ___ NO ___

5. Does generator **label** and **mark** each package in accordance with 49 CFR Part 172 (if circumstances observed)? N/A ✓ YES ___ NO ___

6. Is each container of 110 gallons or less **marked** with the required hazardous waste warning label? N/A ✓ YES ___ NO ___
There were no drums containing waste at the time of inspection.

7. Does generator **placard** off-site waste shipments in accordance with DOT regulations (49 CFR Part 172, Subpart F)? (if circumstances observed) N/A ✓ YES ___ NO ___

Section E - Accumulation Time Exemption (335.69)

Note: A facility may accumulate and store hazardous wastes in containers or tanks for up to 90 days without a permit.

1. Is the beginning **date** of Accumulation Time clearly indicated on each container? N/A ✓ YES ___ NO ___

2. Is each container or tank clearly labeled or marked with the words "Hazardous Waste"? N/A ✓ YES ___ NO ___
There were no drums containing wastes at the time of inspection.

Note: Attach a Container Storage Area Checklist for each container storage area.

Note: Attach a Tanks Checklist for each tank or each group of similar tanks.

Note: If this is a T/S/D Facility, proceed to General Facilities Checklist.

TNC Req. No. 31633

Checklist Generators

COMMENTS SHEET

Section A 15: The boiler or industrial furnace (Facility No. 03) is not being used to dispose of any wastes; and according to plant personnel, will not be used in the future. Also, two surface impoundments (Facilities No 01 and 02) are in the process of being closed.

Section C 13: During inspection of the manifests, it was found that approximately 150 cubic yards of sodium hydroxide contaminated material was removed from the plant site. According to plant personnel, a caustic line broke, spilling approximately 100 lbs of sodium hydroxide on the plant site. The sodium hydroxide contaminated material was soil removed from the area. This spill was not reported.

Section /

Section /

TWC Solid Waste Inspection Report

TWC Reg. No. 316:33

GENERAL FACILITIES CHECKLIST

Section A - General Site Information

		***
1. Are any solid waste facilities located in the 100-year floodplain?	NO ✓ YES ___	
2. Describe land use within one mile residential, commercial, rural		
3. Are there any **closed** or **abandoned** solid waste facilities? Two surface impoundments and the container storage area are in the process of being closed.	NO ✓ YES ___	
4. Has proof of **deed recordation** of all on-site solid waste Land Disposal facilities been provided to TWC?	N/A ✓ YES ___ NO ___	
5. Are all solid waste facilities compliant with TAC **general prohibitions**?	YES ✓ NO ___	

NOTE: Attach Plant Map showing site orientation, waste management facilities, and major topographic features. Each facility component checklist should have a map or sketch attached.

+++ STOP & SIGN HERE IF THERE ARE NO RCRA FACILITIES ON-SITE +++

Signed: _____

Section B - Personnel Training

1. Does the owner/operator maintain proper personnel training records at the facility?	N/A ___ YES ✓ NO ___	
2. Do personnel training records include:		
a. Job title and written job description of each position	N/A ___ YES ✓ NO ___	
b. Description of type and amount of training	N/A ___ YES ✓ NO ___	
c. Records of training given to facility personnel	N/A ___ YES ✓ NO ___	
3. Are personnel training records maintained for the appropriate length of time?	N/A ___ YES ✓ NO ___	
4. Is the training program adequate for response to emergencies? A more detailed training program is being revised to include more emphasis on the container storage area.	N/A ___ YES ✓ NO ___	

*** An entry in this column indicates explanation/response is needed.

Section C - Preparedness and Prevention

1. Describe any evidence of fire, explosion, or contamination of the environment in the comments sheet.

2. Is the facility equipped with: ***

   a. (Internal communication) or alarm system within easy access — YES ✓ NO ___
   b. Communication system to call off-side emergency assistance — YES ✓ NO ___
   c. Fire, spill control, and decontamination equipment — YES ✓ NO ___
   d. Adequate fire-water supply (volume and pressure) — YES ✓ NO ___
      located around transformers and electrical equipment

3. Is the above-noted emergency equipment **regularly tested?** — YES ✓ NO ___
   Fire extinguishers checked monthly
   Sprinkler system checked annually

4. Is **aisle space** sufficient to allow unobstructed movement of personnel and equipment? — YES ✓ NO ___

5. Has the owner/operator attempted to familiarize local response authorities with the facility layout, entrances and evacuation routes, hazardous waste properties and hazards, and the work location of facility personnel? — N/A ___ YES ___ NO ✓

6. If more than one law enforcement or fire department responds, has a **primary authority** been designated? — N/A ___ YES ✓ NO ___
   The plant is located in the city limits of Webster.

7. Has the owner/operator attempted to reach agreements with State emergency response teams, emergency response contractors and equipment suppliers? — N/A ___ YES ✓ NO ___

8. Has the owner/operator attempted to make arrangements with **local hospitals** to familiarize them with the hazardous wastes handled and the injuries that could result from fires, explosions, or releases from the facility? — N/A ___ YES ___ NO ✓

9. If State or local authorities have declined to enter into the above-noted agreements, has the owner/operator documented this? — N/A ✓ YES ___ NO ___

Section D - Contingency Plan and Emergency Procedures

1. Is a contingency plan to minimize dangers from accidental releases from hazardous waste facilities maintained on site? See comments — YES ✓ NO ___

2. Does the contingency plan contain:

   a. Description of emergency response actions — YES ✓ NO ___
   b. Names of emergency coordinators on-site or on-call — YES ✓ NO ___
   c. Location of emergency equipment — YES ✓ NO ___
   d. Evacuation plans — YES ✓ NO ___

+++ STOP & SIGN HERE IF FACILITY QUALIFIES FOR THE 90-DAY STORAGE EXEMPTION +++

Signed: _____

The facility will be a 90-day storage exempt facility in 2-3 weeks upon certification of closure.

Section E - Waste Analysis ***

1. Is a **written waste analysis plan** maintained at the facility? YES___ NO___

2. Does the plan include the following:

   a. Detailed physical and chemical analysis of all haz. wastes YES___ NO___

   b. Rationale for selection of analytical parameters YES___ NO___

   c. Test methods used YES___ NO___

   d. Sampling methods used YES___ NO___

   e. Frequency the initial analysis will be reviewed or repeated YES___ NO___

   f. Waste analyses that generators have agreed to provide N/A___ YES___ NO___

3. For disposal facilities receiving wastes from off-site, is each incoming waste shipment inspected and, if necesary, analyzed to check it against the manifest? N/A___ YES___ NO___

Section F - Security

1. Does the facility provide adequate security to minimize the possibility of unauthorized entry by persons or livestock? YES___ NO___

2. Is security of the active portion of the facility provided through:

   a. 24 Hr surveillance
   or

   b. Perimeter barriers and means to control entry YES___ NO___

3. Does facility post a "Danger-Unauthorized Personnel Keep Out" **sign** at approaches to active portions of the facility? YES___ NO___

Section G - General Inspection Requirements ***

1. Is a **written inspection schedule** maintained at the facility? N/A___ YES___ NO___

2. Does the schedule provide for inspection of the following:

   a. Monitoring equipment YES___ NO___
   b. Safety and emergency equipment YES___ NO___
   c. Security devices YES___ NO___
   d. Operating and structural equipment YES___ NO___

3. Does the schedule identify the following **types of problems** to be looked for during the inspection:

   a. Malfunction and deterioration YES___ NO___
   b. Operator error YES___ NO___
   c. Discharge or threat of discharge YES___ NO___

4. Does owner/operator maintain **inspection logs** which include:

   a. Date and time of inspection YES___ NO___
   b. Name of inspector YES___ NO___
   c. Notation of observation YES___ NO___
   d. Date and nature of repairs and remedial action YES___ NO___

5. Have malfunctions or other deficiencies noted in the inspection log been corrected? N/A___ YES___ NO___

6. Are **inspection log records** maintained for three years? YES___ NO___

Section H - Requirements for Ignitable, Reactive or Incompatible Wastes

1. Does owner/operator take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes? N/A___ YES___ NO___

2. Are smoking and open flame confined to designated smoking areas? N/A___ YES___ NO___

3. Are "No Smoking" signs posted in areas with ignitable or reactive wastes? N/A___ YES___ NO___

Section I - Manifest System, Recordkeeping and Reporting ***

1. Does owner/operator comply with manifesting requirements? N/A___ YES___ NO___

2. For wastes received from off-site:

   a. Is waste transported by rail or water (bulk) accompanied by a properly executed shipping papers? N/A___ YES___ NO___

   b. Have all shipments been consistent with the manifests? N/A___ YES___ NO___

   c. Are unmanifested wastes reported to TWC? N/A___ YES___ NO___

   d. Have manifest discrepancies been reconciled with the generator and transporter? N/A___ YES___ NO___

Section J Operating Record

1. Is a **written operating record** maintained at the facility? N/A___ YES___ NO___

2. Does the operating record reflects the following:

   a. Description and quantity of each hazardous waste received and methods and date of treatment/storage/disposal at the facility. N/A___ YES___ NO___

   b. Location and quantity of each hazardous waste within the facility. N/A___ YES___ NO___

   c. Records and results of waste analyses and trial tests N/A___ YES___ NO___

   d. Summary reports of all incidents requiring implementation of the Emergency Contingency Plan. N/A___ YES___ NO___

   e. **Closure Cost estimates** for all facilities. N/A___ YES___ NO___

   f. **Post-Closure cost estimates** for all disposal facilities. N/A___ YES___ NO___

Section K - Financial Assurance

1. Did preinspection call to Central Office confirm that facility has submitted current financial assurance documentation? N/A___ YES___ NO___

2. If Yes, indicate the documents submitted and their respective values:

___ Sudden Liability- Amount: $_____ per occurance, $_____ annual
___ Non-sudden Liability- Amount: $_____ per occurance, $_____ annual

___ Closure Assurance- Amount: $_____
___ Post-Closure Assurance- Amount: $_____

___ Corrective Action- Amount: $_____

3. Did Financial Assurance Officer report that documentation is adequate? N/A___ YES___ NO___

TWC Reg. No. 31633

Checklist General facilities

COMMENTS SHEET

Section C / 5.8, ¢ 9 : HL&P personnel have not formally contacted local response authorities for the purpose of familiarizing them with the power plant. Arrangements have not been made to familiarize local hospitals with the hazardous wastes handled at the plant and possible injuries associated with the waste.

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TWC Reg. No. 31633

TWC Solid Waste Inpection Report
(TAC 335.241-247)
CONTAINER STORAGE AREA CHECKLIST

Reg. Facility No. 05

Class of Wastes (H,N,H...)

NOTE: TAC rules 335.241-247 apply to interim status and 90-Day Storage exempt facilities.

		***
1. Are containers in good condition?	YES ✓ NO ___	
2. Are the containers compatible with the wastes being stored?	YES ✓ NO ___	
3. Are containers kept closed and stored in a safe manner?	YES ✓ NO ___	
4. Are containers inspected weekly for leakage and deterioration?	YES ✓ NO ___	
5. Are containers holding **ignitable** or **reactive** wastes kept at least 15 meters (50 ft.) from the facility's property line?	N/A ___ YES ✓ NO ___	
6. Are containers holding **incompatible** wastes separated by a physical barrier **or** sufficient distance?	N/A ✓ YES ___ NO ___	
7. Does the storage area have containment protection?	YES ___ NO ✓	

8. Describe the Container Storage Area using comments sheet and/or photos:

The container storage area recently underwent closure as a storage facility certification by a registered P.E. is pending. A 500-gallon tank containing the waste oils (Class I & II) is located in the container storage area, and is about ½ full. Also located in the area are 2 empty 55-gallon drums, one marked "waste solvent", and another to be removed from the area. Labeling and inspection requirements for containers to be held there in the future were discussed with HL&P personnel.

*** An entry in this column indicates corrective action/response is needed.

TEXAS WATER COMMISSION

Lee RWL
Coloton

34599

April 4, 1986

14 July 86
Implementation Date

Mr. Melvin G. Warthan
Manufacturing, Supply and Distribution
Chemical Enterprises, Inc.
8582 Katy Freeway, Suite 202
Houston, Texas 77024

Dear Mr. Warthan:

Re: The assessment of pesticide contamination at the Chemical Enterprises, Inc., Odessa Facility
Solid Waste Registration No. 34599

The staff of the Enforcement Unit has reviewed the subject pesticide contamination assessment submitted with your letter of November 22, 1985. We note that this assessment satisfactorily sets out to measure the known area of contamination at the facility. The Texas Water Commission (TWC) approves the immediate implementation of the assessment with the following additions:

1. Section I.B. of the assessment states that "a surface soil sample will be collected at each intersection of the grid lines." The Commission recommends that the first six inches of soil be removed prior to collecting a surface soil sample at each intersection of the grid lines.

2. Section I.C. of the assessment states that "two subsurface samples will be collected at depths of three feet and six feet at selected stations at each of the two landfills." The Commission recommends that Chemical Enterprises take subsurface samples at depths of one foot and two feet and take any additional deeper subsurface samples that may be necessary to adequately determine the extent of contamination.

3. In addition to collecting subsurface samples at a depth of one foot at selected stations from the Playa Lake area on the plant side and from the Playa Lake east of the plant area, the TWC recommends that surface samples be collected at each grid point. If contamination is found at a depth of one foot, Chemical Enterprises should continue to collect deeper samples until background concentrations are reached.

4. Submit an updated schedule for completion of the cleanup. In addition, submit monthly status reports to the TWC outlining the cleanup progress.

The Commission request that Chemical Enterprises, Inc., immediately implement the subject plan. Please notify the TWC Central Office and TWC District Office of the implementation date.

Should you have any questions or comments please do not hesitate to contact Ms. Nancy J. Bolz of my staff at 512/463-8564.

Sincerely,

Merton J. Coloton, P.E., Chief
Hazardous and Solid Waste Enforcement Section
Hazardous and Solid Waste Division

NJB/da

cc: Texas Water Commission District 10 Office
Dallas Cantwell, President, Chemical Enterpises
James Baker, Ph.D., Rollins Environmental Services Inc.
Darless Goolsby, Chemical Enterprises, Inc.

TEXAS WATER COMMISSION

July 16, 1986

Mr. W. F. McGuire
Manager
Environmental Protection Department
Houston Lighting and Power
P.O. Box 1700
Houston, Texas 77001

Dear Mr. McGuire:

RE: Registration No. 31633-Webster Station Industrial Solid Waste Compliance Inspection

On July 9, 1986, Paula Thetford of this office conducted an industrial solid waste inspection of your facility. The following deficiencies were noted:

1. Texas Administrative Code (TAC), Section 335.6(c) - Notification Requirements

   As discussed with your personnel, the Registration will need to be updated upon certification of closure of your waste management facilities. At this time please include any additional changes that should be made in order to accurately reflect current waste handling practices. A request to amend the registration should be sent to:

   Texas Water Commission
   Attention: Mr. Dick Martin
   P.O. Box 13087
   Austin, Texas 78711

2. TAC Section 335.112 - Preparedness and Prevention

   Arrangements should be made to familiarize police and fire departments with the layout of the facility. Also, local hospitals should be made familiar with the hazardous wastes handled at the facility and the related injuries which could occur.

In addition, during inspection of your shipping manifests, it was found that 150 cubic yards of sodium hydroxide contaminated material was removed from your facility. Further discussion revealed that the contaminated material was soil contaminated by a recent spill of sodium hydroxide. Please be advised that the State of Texas Oil and Hazardous Substances Spill Contingency Plan, Section 2.2 requires immediate reporting of any spill of a hazardous substance to the TWC.

Please respond to this office in writing by August 15, 1986 with your plans and implementation schedule which will ensure corrective action of the above listed deficiencies by September 15, 1986. If you have any questions, please contact Paula Thetford of this office.

Sincerely,

Tom Kearns
Manager
Hazardous and Solid Waste
Southeast Region

TK/PT/np

DW0550 TEXAS WATER COMMISSION 05-08-86

NOTICE OF REGISTRATION

INDUSTRIAL SOLID WASTE GENERATION/DISPOSAL

THIS IS NOT A PERMIT AND DOES NOT CONSTITUTE AUTHORIZATION OF ANY WASTE MANAGEMENT ACTIVITIES OR FACILITIES LISTED BELOW. REQUIREMENTS FOR SOLID WASTE MANAGEMENT ARE PROVIDED BY TEXAS ADMINISTRATIVE CODE SECTION 335 OF THE RULES OF THE TEXAS WATER COMMISSION (TWC). CHANGES OR ADDITIONS TO WASTE MANAGEMENT METHODS REFERRED TO IN THIS NOTICE REQUIRE WRITTEN NOTIFICATION TO THE TWC.

DATE OF NOTICE: 05-09-86 REGISTRATION DATE: 12-14-79

REGISTRATION NUMBER: 31633 EPA I.D. NUMBER: TXD000837369

THE REGISTRATION NUMBER PROVIDES ACCESS TO STORED INFORMATION PERTAINING TO YOUR OPERATION. PLEASE REFER TO THAT NUMBER IN ANY CORRESPONDENCE.

COMPANY NAME: HOUSTON LIGHTING & POWER CO.
MAILING ADDRESS: WEBSTER GENERATING STATION
P O BOX 1700 - W.F.MCGUIRE
HOUSTON, TEXAS 77001
GENERATING SITE LOCATION:
19301 OLD GALVESTON RD, WEBSTER, TX
CONTACT PERSON: W F MCGUIRE
PHONE: (713) 922-2186
NUMBER OF EMPLOYEES: LESS THAN 100
TWC DISTRICT: 07

REGISTRATION STATUS: ACTIVE
REGISTRATION TYPE: GENERATOR
HAZARDOUS WASTE STATUS: GENERATOR/TSD FACILITY

I. WASTE GENERATED:

WASTE NUMBER	DESCRIPTION	CLASS	CODE	DISPOSITION
001	OILS, WASTE	I	110450	ON-SITE / SOLD FOR RECOVERY/SECONDARY USE
002	MISC. INORGANIC SLUDGES	II	240540	OFF-SITE
003	ASBESTOS	I	170750	ON-SITE/OFF-SITE
004	BRICK, REFRACTORY (SPENT)	I	170300	ON-SITE/OFF-SITE
005	SOLVENTS, SPENT	IH	910100	ON-SITE / SOLD FOR RECOVERY/SECONDARY US

				E
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D001			
006	PAINT THINNER	IH	910110	OFF-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): F003, F005			
007	WASTEWATER,DEMINERALIZER ACID REGENERATION	IH	902570	ON-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002			
008	WASTEWATER,DEMINERALIZER BASE REGENERATION	IH	902560	ON-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002			
009	DEMINERALIZER REGENERANT SLUDGE	II	241470	OFF-SITE
010	METAL CLEANING WASTE, INORGANIC	IH	903070	ON-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002			
011	SLUDGE CONTAINING INORGANICS	II	241210	OFF-SITE
012	METAL CLEANING WASTE, ORGANIC	II	215290	ON-SITE/OFF-SITE
013	SLUDGE CONTAINING ORGANICS	II	248990	OFF-SITE
014	OILS, WASTE	II	210450	ON-SITE / SOLD FOR RECOVERY/SECONDARY USE
015	OILY WASTE, MISCELLANEOUS	II	283230	ON-SITE/OFF-SITE
016	OILY WASTE, MISCELLANEOUS	I	183230	ON-SITE/OFF-SITE
017	SODIUM HYDROXIDE CONTAMINATED MATERIAL	IH	976330	OFF-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002			
018	SANDBLASTING GRIT	IH	973280	OFF-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D008			

019	MERCURY CONTAMINATED WASTE	IH	978850	OFF-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D009			
020	TANK BOTTOMS, FUEL OIL	I	152920	OFF-SITE/SECONDARY USE
021	SANDBLASTING GRIT	II	273280	OFF-SITE
022	DEMINERALIZER RESIN BEADS,SPENT	II	270131	OFF-SITE
023	FLUE DUST	II	271430	OFF-SITE
024	ACID CONTAMINATED MATERIAL	IH	979290	OFF-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS):			

II. SHIPPING/REPORTING: NOT APPLICABLE

III. ON-SITE WASTE MANAGEMENT FACILITIES:

FAC NO.	FACILITY	STATUS
01	SURFACE IMPOUNDMENT STORAGE OF WASTE NUMBER(S) 007, 008	~~ACTIVE~~ Closure-in-progress
02	SURFACE IMPOUNDMENT STORAGE OF WASTE NUMBER(S) 010	~~ACTIVE~~ Closure-in progress
03	BOILER OR INDUSTRIAL FURNACE (ENERGY PRODUC PROCESSING/DISPOSAL OF WASTE NUMBER(S) 001, 005, 014	ACTIVE → never used
04	SURFACE IMPOUNDMENT STORAGE OF WASTE NUMBER(S) 012 - Class II waste	ACTIVE
05	MISCELLANEOUS STORAGE CONTAINERS STORAGE OF WASTE NUMBER(S) 001, 003, 004, 005, 006, 014, 015, 016	ACTIVE

UNLESS OTHERWISE STATED ABOVE, FACILITIES ARE LOCATED
AT 19301 OLD GALVESTON RD, WEBSTER, TX
COUNTY OF HARRIS

IV. RECORDS.

A. FOR PURPOSES OF FILING ANNUAL REPORTS PURSUANT TO TEXAS ADMINISTRATIVE CODE SECTION 335 OF THE RULES OF THE TWC PERTAINING TO INDUSTRIAL SOLID WASTE MANAGEMENT, RECORDS SHOULD BE MAINTAINED FOR STORAGE, PROCESSING AND/OR DISPOSAL OF THE FOLLOWING WASTE(S) LISTED IN PART I:

C01 110450 OILS, WASTE

C03 170750 ASBESTOS

C04 170300 BRICK, REFRACTORY (SPENT)

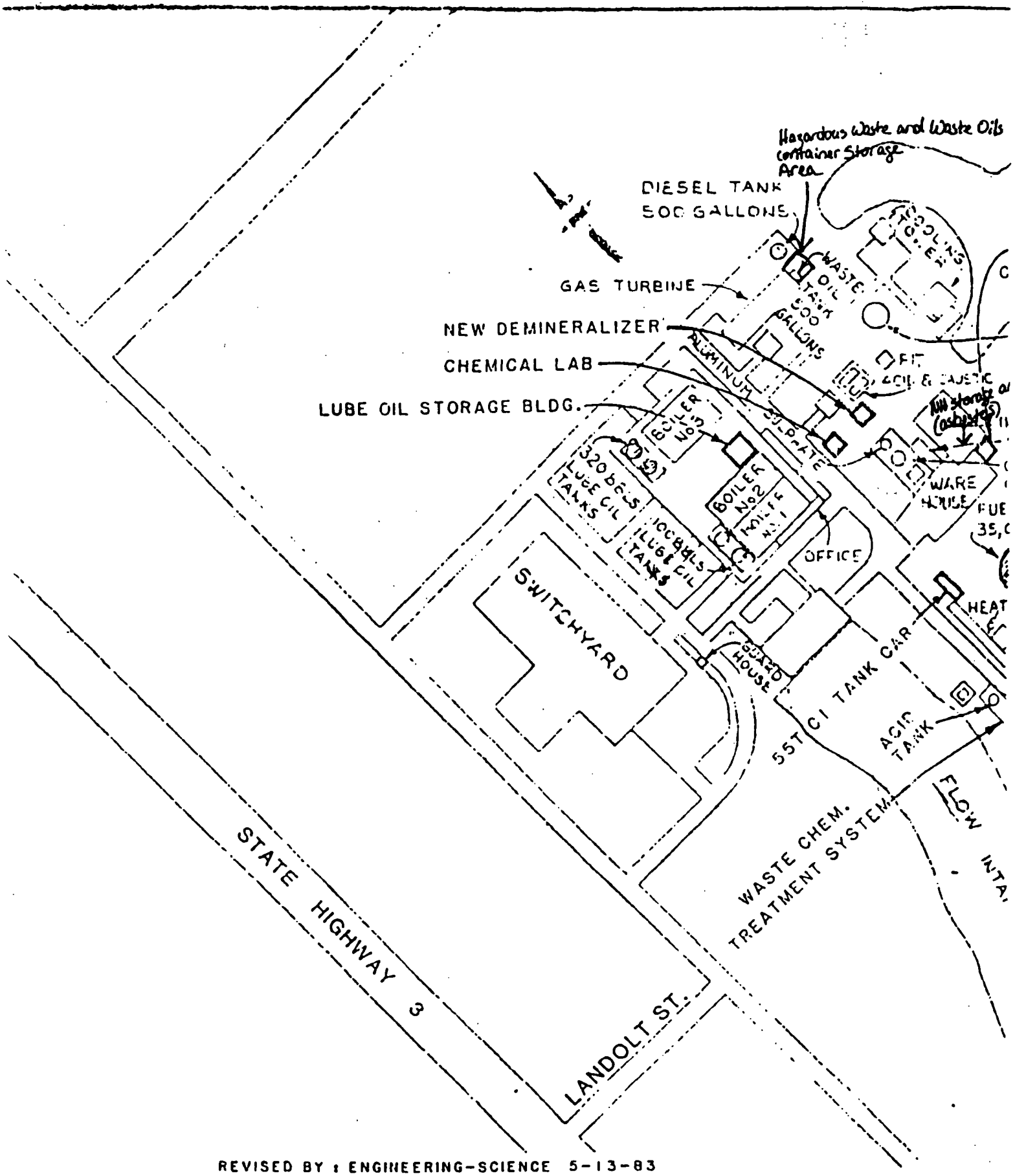
C05 910100 SOLVENTS, SPENT

C07 902570 WASTEWATER,DEMINERALIZER ACID REGENERATION

C08 902560 WASTEWATER,DEMINERALIZER BASE REGENERATION

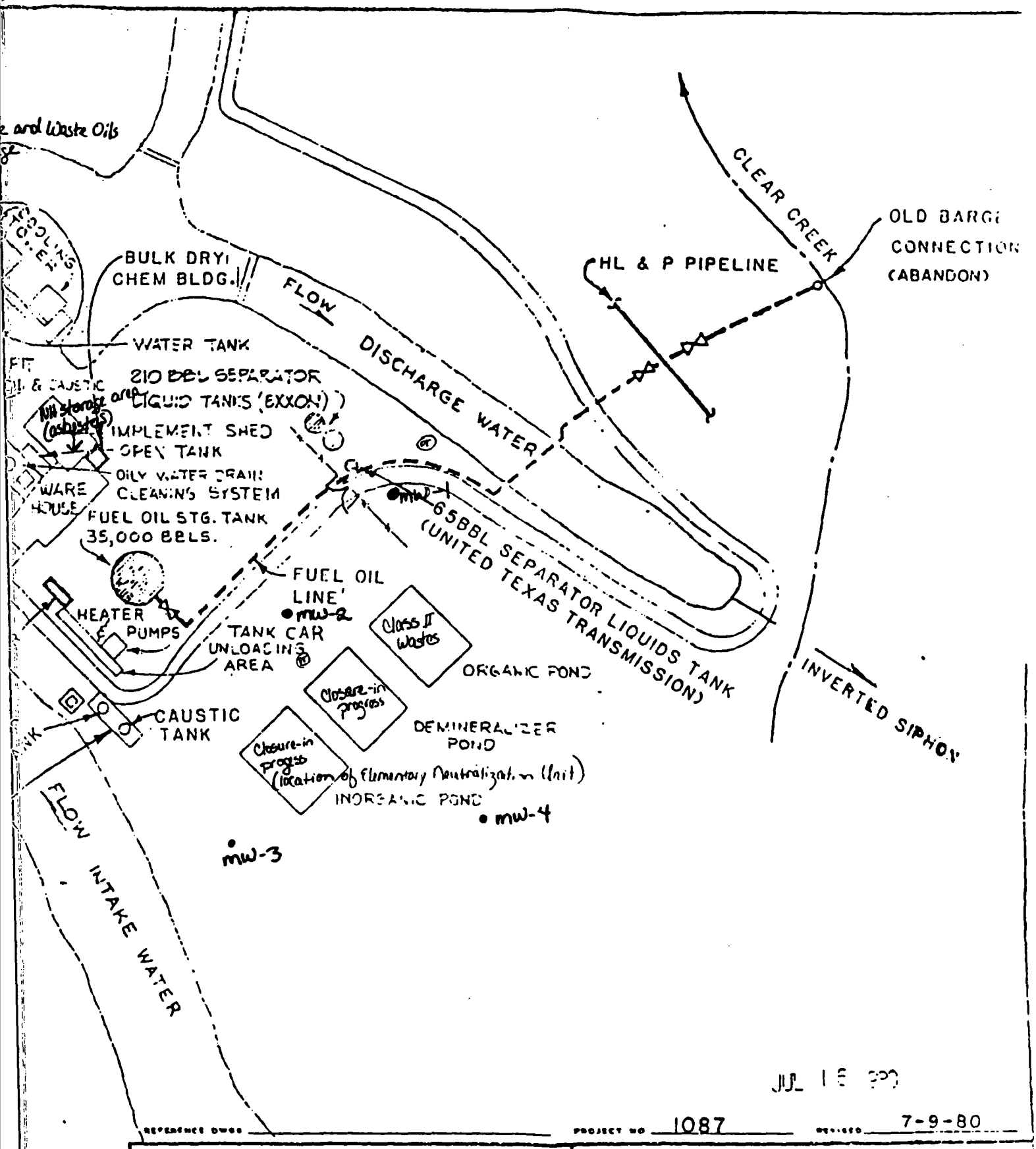
C10 903070 METAL CLEANING WASTE, INORGANIC

C16 183230 OILY WASTE, MISCELLANEOUS



REVISED BY : ENGINEERING-SCIENCE 5-13-83

ENGINEERING-SCIENCE
DESIGN • RESEARCH • PLANNING
16915 EL CAMINO REAL, HOUSTON, TEXAS 77058 • 713/488-2944
OFFICES IN PRINCIPAL CITIES



JUL 15 '80

REFERENCE DWGS _____ PROJECT NO 1087 REVISED 7-9-80

PIPE LINE TECHNOLOGISTS, INC.
HOUSTON, TEXAS

HOUSTON LIGHTING & POWER COMPANY

WEBSTER PLANT SITE PLOT PLAN

	DRAWN	CHECKED	APPROVED
BY	G P		E. E. M.
DATE	5-15-74		[illegible]

SCALE: NONE

DRAWING NUMBER: C — 868-4723 — [illegible]

REference 8

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

May 6, 1985

Mr. Jay Snow, P.E.
Chief, Solid Waste Section
Texas Department of Water Resources
P. O. Box 13087, Capitol Station
Austin, Texas 78711

Dear Mr. Snow:

SUBJECT: WEBSTER GENERATING STATION - TDWR NO. 31633
Supplement to Closure Plan for Hazardous Waste
Surface Impoundments

A closure plan for hazardous waste surface impoundments at this facility was submitted on February 11, 1985. Your letter of April 15, 1985, discussed deficiencies in the closure plan and requested additional information for use in your evaluation. Attached is a supplement to the closure plan which addresses the comments in your letter.

Your expeditious review and response to the enclosed material will be appreciated since, as stated in the closure plan, HL&P intends to initiate closure on or about June 1, 1985, pending TDWR review and approval.

Please contact Dr. R. D. Groover, 713/922-2195, if you have any questions.

Sincerely,

Edwood A. Fath

for W. F. McGuire, Manager
Environmental Protection Dept.

BAD/rmg
Attachment

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Ave.
Austin, Texas

TEXAS WATER DEVELOPMENT BOARD
Louis A. Beecherl, Jr., Chairman
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Charles E. Nemir
Executive Director

TEXAS WATER COMMISSION
Paul Hopkins, Chairman
Lee B. M. Biggart
Ralph Roming

May 16, 1985

Mr. W. P. McGuire, Manager
Environmental Protection Dept.
Houston Lighting and Power
P. O. Box 1700
Houston, Texas 77001

Dear Mr. McGuire:

Re: Proposed Wastewater Treatment Tank
Solid Waste Registration No. 31633
Webster, Texas Facility

This is in response to your correspondence received April 22, 1985 which transmitted the plans and specifications for the proposed fiberglass-lined concrete storage tank. As indicated in your letter, this tank will temporarily store demineralizer regenerant wastewater and boiler blowdown prior to treatment in the existing wastewater treatment facility.

The plans were reviewed for conformance with American Concrete Institute (ACI) and American Society of Testing and Materials (ASTM) Standards relating to the materials of construction and the requirements for reinforcing steel. Our review indicates that the proposed tank meets the definition of a "Wastewater Treatment Unit" pursuant to Texas Administrative Code (TAC) 335.42 and appears to be exempt from hazardous waste permitting requirements. We anticipate this decision will expedite your construction plans.

Should you require any additional assistance, please contact Ms. Kathleen DeMarinis at AC512/463-8184.

Sincerely,

Ray Henry Austin

Ray Henry Austin, Head
Storage and Processing Facilities Unit
Solid Waste Section

RHA:lab
cc: TDWR District 7 - Deer Park

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

May 13, 1985

Mr. Jay Snow, P.E.
Chief, Solid Waste Section
Texas Department of Water Resources
P. O. Box 13087, Capitol Station
Austin, Texas 78711

SUBJECT: CLOSURE PLANS FOR CONTAINER STORAGE AREAS

S. R. Bertron Generating Station	TDWR No. 31637
H. O. Clarke Generating Station	TDWR No. 31635
Greens Bayou Generating Station	TDWR No. 31634
P. H. Robinson Generating Station	TDWR No. 31638
Webster Generating Station	TDWR No. 31633
T. H. Wharton Generating Station	TDWR No. 31636

Dear Mr. Snow:

Discussions between Mr. Ray Austin, Mr. Jim Feeley (TDWR) and Dr. R. D. Groover (HL&P) indicate that, to achieve full-facility closure and generator-only status for the above-referenced facilities, closure plans for container storage areas are required even-though the storage areas will continue in use under the "Accumulation Time" storage exclusion (31 TAC, Section 335.69). Transmitted herewith are three (3) copies of closure plans for the container storage areas. The current status of each generating station is briefly summarized below:

S. R. Bertron
All hazardous waste surface impoundments have been closed under TDWR-approved closure plans; an affidavit for exclusion from hazardous waste permitting is in preparation.

H. O. Clarke
All hazardous waste surface impoundments have been closed under TDWR-approved closure plans, and an affidavit of exclusion from hazardous waste permitting was submitted on March 12, 1985.

Greens Bayou
The demineralizer regenerant impoundment has been closed under a TDWR-approved closure plan. After completion of a fiberglass-lined concrete tank, the inorganic impoundment will be closed and an affidavit of exclusion from hazardous waste permitting will be submitted.

P. H. Robinson
Closure plans for three hazardous waste surface impoundments have been submitted to TDWR. Upon final approval, closure activities are scheduled to begin in the summer of 1985.

Webster
Closure plans for two hazardous waste surface impoundments have been submitted to TDWR. Upon final approval, closure activities are scheduled to begin in the summer of 1985.

T. H. Wharton
The inorganic metal cleaning impoundment has been closed under a TDWR-approved closure plan. After completion of a fiberglass-lined concrete tank, the demineralizer regenerant impoundment will be closed and an affidavit of exclusion from hazardous waste permitting will be submitted.

Should you have any questions pursuant to these container storage area closure plans, please contact Mr. R. T. Bye at 922-2201.

Sincerely,

Edward A. Smith

for W. F. McGuire, Manager
Environmental Protection Dept.

RDG/rmr
Attachments

CLOSURE PLAN
FOR
S. R. BERTRON HAZARDOUS WASTE CONTAINER STORAGE AREA

1.0 INTRODUCTION

Background - Houston Lighting & Power Company (HL&P) operates a hazardous waste container storage area at the S. R. Bertron Electric Generating Station. The drum storage area is located in the north side of the Construction Warehouse in one tenth of a metal storage building. The remainder of the building is used for construction storage. The area is clearly identified as a hazardous waste storage area by signs on the building.

In accordance with the requirements of 31 TAC, Section 335, Subchapter J, and 40 CFR 264.178, this closure plan identifies the

[redacted]

facility. Accumulation time after closure for hazardous waste will be less than 90 days.

This facility currently stores bagged asbestos and 55 gallon drums of liquid and solid hazardous and nonhazardous wastes. These wastes include refractory brick, spent solvents, paint thinner, waste oils, miscellaneous oily wastes, and sandblasting grit.

All spills and leaks are cleaned up promptly using absorbants and surfactants when necessary.

2.0 MIGRATION ASSESSMENT

Surface Water - There is little potential for surface water contamination resulting from operation of the container storage

55 gallon drum and disposed of at an off-site Class I disposal facility.

5.0 NOTIFICATION

Mr. Merton J. Coloton, Supervisor, TDWR District 7, will be notified ten (10) days prior to the commencement of closure in the event that TDWR District 7 personnel desire to observe closure activities.

6.0 CLOSURE CERTIFICATION

Following completion of all closure activities, a registered professional engineer will provide a written certification documenting that closure has been completed in accordance with this plan. This written certification will be submitted to the TDWR.

7.0 POST-CLOSURE ACTIVITES

The storage area will continue to be used for containerized hazardous and nonhazardous wastes. An inventory of accumulation dates will be maintained to insure that hazardous wastes remain on-site for less than 90 days.

CLOSURE PLAN
FOR
WEBSTER HAZARDOUS WASTE CONTAINER STORAGE AREA

1.0 INTRODUCTION

Background - Houston Lighting & Power Company (HL&P) operates a hazardous waste container storage area at the Webster Electric Generating Station. The container storage area is located adjacent to the waste oil tank at the east end of the gas turbine building.

In accordance with the requirements of 31 TAC, Section 335, Subchapter J, and 40 CFR 264.178, this closure plan identifies the steps necessary to close the container storage facility. Following closure, the area will continue to be used as a container storage facility. Accumulation time after closure for hazardous waste will be less than 90 days.

This facility currently stores 55 gallon drums of liquid and solid hazardous and nonhazardous wastes. These wastes include refractory brick, spent solvents, paint thinner, waste oils, miscellaneous oily wastes, and sandblasting grit.

All spills and leaks are cleaned up promptly using absorbants and surfactants when necessary.

2.0 MIGRATION ASSESSMENT

Surface Water - There is little potential for surface water contamination resulting from operation of the container storage area. The area is housed on a concrete pad and all spills or leaks are cleaned up promptly.

Subsurface Migration - The floor of the area is reinforced concrete. Any material spilled or leaked onto the floor is cleaned up promptly. Potential for subsurface migration of wastes from this facility is nil.

3.0 CLOSURE PROCEDURE AND SCHEDULE

Closure of the container storage area will begin on or about August 1, 1985, (pending TDWR approval) and will consist of the following steps:

1. Prior to closure all wastes stored in the facility will be transferred off-site to a Class I disposal facility.
2. The floor will be cleaned using brushes, solvents and an all purpose surfactant.
3. Absorbent material will be used to pick up the surfactant.
4. The cleaned area will then be rinsed three times with water. All water will be picked up by wet-vacuum or with sponge mops.
5. All materials and liquids will be placed in a 55 gallon drum for off-site disposal.

4.0 MISCELLANEOUS PROCEDURES

Safety - Protective clothing will be worn during cleaning to provide worker protection.

Material Disposal - All materials, liquids, and protective clothing used during closure of the storage area will be placed in a 55 gallon drum and disposed of at an off-site Class I disposal facility.

5.0 NOTIFICATION

Mr. Merton J. Coloton, Supervisor, TDWR, District 7, will be notified ten (10) days prior to the commencement of closure in the event that TDWR District 7 personnel desire to observe closure activities.

6.0 CLOSURE CERTIFICATION

Following completion of all closure activities, a registered professional engineer will provide a written certification documenting that closure has been completed in accordance with this plan. This written certification will be submitted to the TDWR.

7.0 POST-CLOSURE ACTIVITES

The storage area will continue to be used for containerized hazardous and nonhazardous wastes. An inventory of accumulation dates will be maintained to insure that hazardous wastes remain on-site for less than 90 days.

SUPPLEMENT TO

CLOSURE PLAN FOR TWO HAZARDOUS WASTE IMPOUNDMENTS AT THE WEBSTER GENERATING STATION

TDWR NO. 31633

HOUSTON LIGHTING & POWER COMPANY

HOUSTON, TEXAS

JULY 1985

SEQUENCE OF SAMPLING

For purposes of waste classification prior to disposal as outlined in Sec. 3.3, Sludge Thickness and Analysis and Clay Liner Testing, a composite sample of the sludge and first foot of clay liner will be collected and analyzed for pH and the EP Toxicity metals. All the sludge and one (1) foot of clay material from the surface of the clay liner will be removed and disposed prior to further sampling the clay liner.

ADDITIONAL ANALYTICAL COMPARISONS AND ANALYSES

In addition to the pH and EP metals toxicity analyses specified in Section 3.3 and the supplement submitted May 6, 1985, seven surface samples of the exposed clay liner and sidewalls will be collected and an analysis for total metals will be performed for the eight EP toxicity metals to demonstrate absence of hazardous waste constituents. Sample collection points will be as described in the May 6 supplement.

These results will be compared to three (3) background samples taken in the vicinity of the impoundments and known literature values for soil samples. These background samples will be composites of the top two feet of soil. If the liner total metals concentrations are within the range of these background samples and known natural soil variations, the impoundments will be considered decontaminated of hazardous waste constituents.

In addition, a 24-hour modification of the TDWR leachate test will be performed on the liner samples from the inorganic metal cleaning impoundment. These samples will be analyzed for sulfate and chloride. These results will be compared to values for background soil samples and to groundwater monitoring data available from the groundwater monitoring program at the power plant. If the leachate concentrations are not significantly different from the background soil and groundwater data, the impoundments will be considered free of Class II waste.

ADDITIONAL SOIL BORINGS

In addition to the four shallow borings in the demineralizer impoundment as specified in Section 4.0, POST-CLOSURE ACTIVITIES, two (2) additional borings will be placed in the sidewall of the impoundment near the sampling locations identified in the May 6 supplement. All six borings will be used to verify the liner characteristics as specified in TDWR Technical Guideline No. 4. If the liner characteristics are not in accordance with TDWR Guideline No. 4, the clay liner will be reworked and recompacted or additional clay will be placed as necessary to meet guideline recommendations.

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

TEXAS WATER DEVELOPMENT BOARD
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Ralph Roming

MAY 17 1985

Mr. W. F. McGuire, Manager
Environmental Protection Dept.
Houston Lighting and Power
P. O. Box 1700
Houston, Texas 77001

KMD DeMarinis
Austin
Snow
for

Dear Mr. McGuire:

Re: Proposed Wastewater Treatment Tank
Solid Waste Registration No. 31633
Webster, Texas Facility

This is in response to your correspondence received April 22, 1985 which transmitted the plans and specifications for the proposed fiberglass-lined concrete storage tank. As indicated in your letter, this tank will temporarily store demineralizer regenerant wastewater and boiler blowdown prior to treatment in the existing wastewater treatment facility.

The plans were reviewed for conformance with American Concrete Institute (ACI) and American Society of Testing and Materials (ASTM) Standards relating to the materials of construction and the requirements for reinforcing steel. Our review indicates that the proposed tank meets the definition of a "Wastewater Treatment Unit" pursuant to Texas Administrative Code (TAC) 335.42 and appears to be exempt from hazardous waste permitting requirements. We anticipate this decision will expedite your construction plans.

Should you require any additional assistance, please contact Ms. Kathleen DeMarinis at AC512/463-8184.

Sincerely,

Ray Henry Austin, Head
Storage and Processing Facilities Unit
Solid Waste Section

KMD:lab
cc: TDWR District 7 - Deer Park

TWC Reg. No. 31633

TEXAS WATER COMMISSION
Solid Waste Compliance Monitoring Inspection Report

INSPECTION COVER SHEET

C.O. Use Only
[illegible] LLS

EPA ID No. TXD000837349 Commercial Waste Facility_____ Govt. Facility_____

NAME OF COMPANY Houston Lighting & Power Co. - Webster Station

MAILING ADDRESS PO Box 1700 - WF McGuire, Houston, TX 77001 Tel. (713) 922-8216

SITE LOCATION 19301 Old Galveston Rd., Webster Tel. "

COUNTY Harris TYPE OF INDUSTRY Electric Power Generation

Part A Application submitted to the State ? Yes ✓ No___ To EPA ? Yes ✓ No___
Affidavit of Exclusion submitted to the State ? Yes ✓ No___
Was a written exclusion granted by TWC? Yes___ No ✓ If yes, Date _____
Will this facility require a permit ? Yes___ No ✓

Current Waste Management (Haz.-H, Class I NonHaz.-NH, Class II, III or check as appropriate

Generator H, NH, II Treatment H Storage H, NH, II Disposal_____ Transporter_____

HW Exemptions: SQG ___ 90-Day Storage ✓ Other WW Treatment
Once all closure activities are complete.

HW Facilities (circle appropriate codes): (C) T (SI) WP LT LF I TT TR WDW O

NH Facilities (circle appropriate codes): C T (SI) WP LT LF I TT TR WDW O

Anomalies in the above information will be addressed by : (a) Enforcement in progress ___, (b) Central Office ✓, (c) District Office ___, (d) Owner/Operator ___.

Inspection Information :

Type of Inspection (circle): EV PB EC (CL) GW SA CD FO OT FE SW

Inspector's Name and Title Karen L. Bleam - Hazardous & Solid Waste Specialist

Inspection Participants Richard Bye

Inspection Date(s) October 13, 1985

Approved : [signature] District Manager Signed : Karen L. Bleam Inspector

Date: 12-12-85

TWC Reg. No. 31633

DEC 20 1985

TEXAS WATER COMMISSION
Solid Waste Compliance Monitoring Inspection Report
CONTENTS SHEET

FACILITY NAME Houston Lighting & Power Co. - Webster Station

✓ 1. Code Sheet (0814)

✓ 2. Inspection Cover Sheet

____ 3. Generators Checklist

____ 4. Small Quantity Generator Checklist

____ 5 General Facilities Checklist

6. Component Facility Checklists*

____ A. Containers (C)

____ B. Tanks (T)

____ C. Surface Impoundments (SI)

____ D. Waste Piles (WP)

____ E. Land Treatment (LT)

____ F. Landfills (LF)

____ G. Incinerators (I)

____ H. Thermal Treatment (TT)

____ I. Chemical, Physical, or Biological Treatment (TR)

____ J. Other (O) _____

✓ 6. Closure ~~and Post Closure~~ - In-Progress Checklist

____ 7. Groundwater Monitoring Checklist

____ 8. Notice of Violation (NOV) Letter

____ 9. Interoffice Memorandum (IOM)

✓ 10. Registration

____ 11. Maps, Plans, Sketches

____ 12. Photographs/Slides

✓ 13. Other (describe) correspondence regarding closure

* If a required Checklist is omitted, explain: _____

TWC Solid Waste Inspection Report
(40 CFR Part 264 Subpart G; Part 265 Subpart G)
CLOSURE-In-PROGRESS CHECKLIST

TWC Reg. No. 31633
Reg. Facility No. 05

Note: This checklist is to be completed if company is in the process of closing a hazardous waste management facility.

1. Type of facility: Container Storage Area

2. Has the closure plan received TWC approval or final modification? N/A___ YES ✓ NO___

   Date of approval: 09/23/85

3. Identify the type of closure: Final Closure ____

   Partial Closure ✓

4. If this is a partial closure, is this the last facility to be closed requiring RCRA ground water monitoring? N/A___ YES___ NO ✓

5. If this is an interim status facility:

   a. Has an approved public notice of closure been published? N/A___ YES ✓ NO___

      Date published: 07/26/85

   b. Is a public hearing required ? N/A___ YES___ NO ✓

      Date of hearing: ___/___/____

6. Has on-site closure work started ? N/A___ YES___ NO___

   Date work initiated: 10/18/85

7. Is the on-site closure work proceeding in accordance with the work schedule established in the approved closure plan ? N/A___ YES ✓ NO___

8. Have 180 days elapsed since TWC approval of the closure plan? N/A___ YES___ NO ✓

   a. If yes, has the Executive Director approved a closure period of greater than 180 days ? N/A ✓ YES___ NO___

9. Was District office notified of sampling event when complete removal of land facility was to have been accomplished ? (not a land facility) N/A ✓ YES___ NO___

10. Were TWC samples taken during the inspection to verify completion of closure ? N/A ✓ YES___ NO___

    NOTE: List chain-of-custody tag numbers in comments section.

*** An entry in this column indicates corrective/response is needed.

10/85

Checklist Closure-in-Progress

Date 12-12-95

Reg. ~~Permit~~ No. 31633

COMMENTS SHEET

Section _____ / Paragraph _____: The hazardous waste container storage area was closed according to the outlined closure plan. All containers in storage were disposed of at Rollins and the resulting cleaning materials and contaminated equipment were disposed of at BFI as class II wastes. HL&P will reopen the facility as a less-than-90-day storage facility. One hazardous waste impoundment has been closed, leaving one impoundment to be closed before HL&P-Webster will be exempt from needing a permit under the 90 day storage and wastewater treatment exemptions.

COMPANY NAME: HOUSTON LIGHTING & POWER CO.

D-0550 TEXAS WATER COMMISSION 08-20-85
NOTICE OF REGISTRATION
INDUSTRIAL SOLID WASTE GENERATION/DISPOSAL

THIS IS NOT A PERMIT AND DOES NOT CONSTITUTE AUTHORIZATION OF ANY WASTE MANAGEMENT ACTIVITIES OR FACILITIES LISTED BELOW. REQUIREMENTS FOR SOLID WASTE MANAGEMENT ARE PROVIDED BY TEXAS ADMINISTRATIVE CODE SECTION 335 OF THE RULES OF THE TEXAS WATER COMMISSION (TWC). CHANGES OR ADDITIONS TO WASTE MANAGEMENT METHODS REFERRED TO IN THIS NOTICE REQUIRE WRITTEN NOTIFICATION TO THE TWC.

DATE OF NOTICE: 08-30-85 REGISTRATION DATE: 12-14-79

REGISTRATION NUMBER: 31633 EPA I.D. NUMBER: TXD000837369

THE REGISTRATION NUMBER PROVIDES ACCESS TO STORED INFORMATION PERTAINING TO YOUR OPERATION. PLEASE REFER TO THAT NUMBER IN ANY CORRESPONDENCE.

COMPANY NAME: HOUSTON LIGHTING & POWER CO.
MAILING ADDRESS: WEBSTER GENERATING STATION
P O BOX 1700 - W.F.MCGUIRE
HOUSTON, TEXAS 77001
GENERATING SITE LOCATION:
19301 OLD GALVESTON RD, WEBSTER, TX
CONTACT PERSON: W F MCGUIRE
PHONE: (713) 922-2186
NUMBER OF EMPLOYEES: 50 - 99
TWC DISTRICT: 07

REGISTRATION STATUS: ACTIVE
REGISTRATION TYPE: GENERATOR
HAZARDOUS WASTE STATUS: GENERATOR/TSD FACILITY

I. WASTE GENERATED:

WASTE NUMBER	DESCRIPTION	CLASS	CODE	DISPOSITION
001	OILS, WASTE	I	110450	ON-SITE / SOLD FOR RECOVERY/SECONDARY USE
002	MISC. INORGANIC SLUDGES	II	240540	OFF-SITE
003	ASBESTOS	I	170750	ON-SITE/OFF-SITE
004	BRICK, REFRACTORY (SPENT)	I	170350	ON-SITE/OFF-SITE
005	SOLVENTS, SPENT	II	910100	ON-SITE / SOLD FOR RECOVERY/SECONDARY US

L

EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D001

006 PAINT THINNER IH 910110 OFF-SITE

EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): F003, F005

007 WASTEWATER,DEMINERALIZER ACID REGENERATION IH 902570 ON-SITE

EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002

008 WASTEWATER,DEMINERALIZER BASE REGENERATION IH 902560 ON-SITE

EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002

009 DEMINERALIZER REGENERANT SLUDGE II 241470 OFF-SITE

010 METAL CLEANING WASTE, INORGANIC IH 903070 ON-SITE

EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002

011 SLUDGE CONTAINING INORGANICS II 241210 OFF-SITE

012 METAL CLEANING WASTE, ORGANIC II 215290 ON-SITE/OFF-SITE

013 SLUDGE CONTAINING ORGANICS II 249990 OFF-SITE

014 OILS, WASTE II 210450 ON-SITE / SOLD FOR RECOVERY/SECONDARY USE

015 OILY WASTE, MISCELLANEOUS II 283230 ON-SITE/OFF-SITE

016 OILY WASTE, MISCELLANEOUS I 183230 ON-SITE/OFF-SITE

017 SODIUM HYDROXIDE CONTAMINATED MATERIAL IH 976330 NO LONGER GENERATED

EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D002

018 SANDBLASTING GRIT IH 973280 OFF-SITE

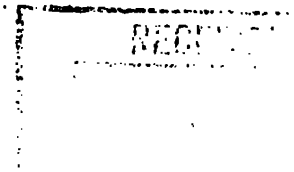
EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D008

019	MERCURY CONTAMINATED WASTE	IH	978850	OFF-SITE
	EPA HAZARDOUS WASTE NOS. (REFER TO 40 CFR PART 261 FOR DESCRIPTIONS): D009			
020	TANK BOTTOMS, FUEL OIL	I	152920	OFF-SITE/SECONDARY USE
021	SANDBLASTING GRIT	II	273280	OFF-SITE

II. SHIPPING/REPORTING: PURSUANT TO TEXAS ADMINISTRATIVE CODE SECTION 335 OF THE RULES OF THE TWC PERTAINING TO INDUSTRIAL SOLID WASTE MANAGEMENT, ISSUANCE OF MANIFESTS AND MONTHLY REPORTING ARE REQUIRED FOR OFF-SITE STORAGE/PROCESSING/DISPOSAL OF THE FOLLOWING CLASS I WASTES LISTED IN PART I.

PREPARE A MONTHLY WASTE SHIPMENT SUMMARY AND SUBMIT IT ALONG WITH THE GREEN COPY OF THE MANIFEST(S) FOR EACH MONTH THAT SHIPMENTS OF THE FOLLOWING WASTE(S) ARE MADE. NO MONTHLY WASTE SHIPMENT SUMMARY IS REQUIRED FOR MONTHS WHEN SHIPMENTS ARE NOT MADE.

003	170750	ASBESTOS
004	170300	BRICK, REFRACTORY (SPENT)
006	910110	PAINT THINNER
016	183230	OILY WASTE, MISCELLANEOUS
018	973280	SANDBLASTING GRIT
019	978850	MERCURY CONTAMINATED WASTE
020	152920	TANK BOTTOMS, FUEL OIL



III. ON-SITE WASTE MANAGEMENT FACILITIES:

FAC NO.	FACILITY	STATUS
01	SURFACE IMPOUNDMENT STORAGE OF WASTE NUMBER(S) 007, 008	ACTIVE
02	SURFACE IMPOUNDMENT STORAGE OF WASTE NUMBER(S) 010	ACTIVE
03	BOILER OR INDUSTRIAL FURNACE (ENERGY PRODUC PROCESSING/DISPOSAL OF WASTE NUMBER(S) 001, 005, 014	ACTIVE

04 SURFACE IMPOUNDMENT ACTIVE
STORAGE
OF WASTE NUMBER(S) 012

05 MISCELLANEOUS STORAGE CONTAINERS ACTIVE
STORAGE
OF WASTE NUMBER(S) 001, 003, 004, 005, 006, 014, 015, 016

UNLESS OTHERWISE STATED ABOVE, FACILITIES ARE LOCATED
AT 19301 OLD GALVESTON RD, WEBSTER, TX
COUNTY OF HARRIS

IV. RECORDS.

A. FOR PURPOSES OF FILING ANNUAL REPORTS PURSUANT TO TEXAS ADMINISTRATIVE CODE SECTION 335 OF THE RULES OF THE TWC PERTAINING TO INDUSTRIAL SOLID WASTE MANAGEMENT, RECORDS SHOULD BE MAINTAINED FOR STORAGE, PROCESSING AND/OR DISPOSAL OF THE FOLLOWING WASTE(S) LISTED IN PART I:

001 110450 OILS, WASTE

003 170750 ASBESTOS

004 170300 BRICK, REFRACTORY (SPENT)

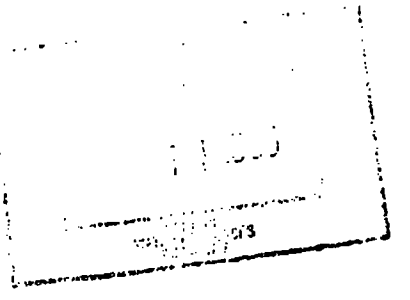
005 910100 SOLVENTS, SPENT

007 902570 WASTEWATER,DEMINERALIZER ACID REGENERATION

008 902960 WASTEWATER,DEMINERALIZER BASE REGENERATION

010 903070 METAL CLEANING WASTE, INORGANIC

016 183230 OILY WASTE, MISCELLANEOUS



The Light company Houston Lighting & Power | P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

REC'D
5/20/85
DWG C

May 13, 1985

Mr. Jay Snow, P.E.
Chief, Solid Waste Section
Texas Department of Water Resources
P. O. Box 13087, Capitol Station
Austin, Texas 78711

Supplement to Bill filing. Thi... Sandy

SUBJECT: CLOSURE PLANS FOR CONTAINER STORAGE AREAS

S. R. Bertron Generating Station	TDWR No. 31637
H. O. Clarke Generating Station	TDWR No. 31635
Greens Bayou Generating Station	TDWR No. 31634
P. H. Robinson Generating Station	TDWR No. 31638
Webster Generating Station	TDWR No. 31633
T. H. Wharton Generating Station	TDWR No. 31636

Dear Mr. Snow:

Discussions between Mr. Ray Austin, Mr. Jim Feeley (TDWR) and Dr. R. D. Groover (HL&P) indicate that, to achieve full-facility closure and generator-only status for the above-referenced facilities, closure plans for container storage areas are required even-though the storage areas will continue in use under the "Accumulation Time" storage exclusion (31 TAC, Section 335.69). Transmitted herewith are three (3) copies of closure plans for the container storage areas. The current status of each generating station is briefly summarized below:

S. R. Bertron
All hazardous waste surface impoundments have been closed under TDWR-approved closure plans; an affidavit for exclusion from hazardous waste permitting is in preparation.

H. O. Clarke
All hazardous waste surface impoundments have been closed under TDWR-approved closure plans, and an affidavit of exclusion from hazardous waste permitting was submitted on March 12, 1985.

Greens Bayou
The demineralizer regenerant impoundment has been closed under a TDWR-approved closure plan. After completion of a fiberglass-lined concrete tank, the inorganic impoundment will be closed and an affidavit of exclusion from hazardous waste permitting will be submitted.

P. H. Robinson
Closure plans for three hazardous waste surface impoundments have been submitted to TDWR. Upon final approval, closure activities are scheduled to begin in the summer of 1985.

Webster
Closure plans for two hazardous waste surface impoundments have been submitted to TDWR. Upon final approval, closure activities are scheduled to begin in the summer of 1985.

T. H. Wharton
The inorganic metal cleaning impoundment has been closed under a TDWR-approved closure plan. After completion of a fiberglass-lined concrete tank, the demineralizer regenerant impoundment will be closed and an affidavit of exclusion from hazardous waste permitting will be submitted.

Should you have any questions pursuant to these container storage area closure plans, please contact Mr. R. T. Bye at 922-2201.

Sincerely,

Edward A. Smith

for W. F. McGuire, Manager
Environmental Protection Dept.

RDG/rmr
Attachments

CLOSURE PLAN
FOR
WEBSTER HAZARDOUS WASTE CONTAINER STORAGE AREA 31633

1.0 INTRODUCTION

Background - Houston Lighting & Power Company (HL&P) operates a hazardous waste container storage area at the Webster Electric Generating Station. The container storage area is located adjacent to the waste oil tank at the east end of the gas turbine building.

In accordance with the requirements of 31 TAC, Section 335, Subchapter J, and 40 CFR 264.178, this closure plan identifies the steps necessary to close the container storage facility. Following closure, the area will continue to be used as a container storage facility. Accumulation time after closure for hazardous waste will be less than 90 days.

This facility currently stores 55 gallon drums of liquid and solid hazardous and nonhazardous wastes. These wastes include refractory brick, spent solvents, paint thinner, waste oils, miscellaneous oily wastes, and sandblasting grit.

All spills and leaks are cleaned up promptly using absorbants and surfactants when necessary.

2.0 MIGRATION ASSESSMENT

Surface Water - There is little potential for surface water contamination resulting from operation of the container storage area. The area is housed on a concrete pad and all spills or leaks are cleaned up promptly.

Subsurface Migration - The floor of the area is reinforced concrete. Any material spilled or leaked onto the floor is cleaned up promptly. Potential for subsurface migration of wastes from this facility is nil.

3.0 CLOSURE PROCEDURE AND SCHEDULE

Closure of the container storage area will begin on or about August 1, 1985, (pending TDWR approval) and will consist of the following steps:

1. Prior to closure all wastes stored in the facility will be transferred off-site to a Class I disposal facility.
2. The floor will be cleaned using brushes, solvents and an all purpose surfactant.
3. Absorbent material will be used to pick up the surfactant.
4. The cleaned area will then be rinsed three times with water. All water will be picked up by wet-vacuum or with sponge mops.
5. All materials and liquids will be placed in a 55 gallon drum for off-site disposal.

4.0 MISCELLANEOUS PROCEDURES

Safety - Protective clothing will be worn during cleaning to provide worker protection.

Material Disposal - All materials, liquids, and protective clothing used during closure of the storage area will be placed in a 55 gallon drum and disposed of at an off-site Class I disposal facility.

5.0 NOTIFICATION

Mr. Herton J. Coloton, Supervisor, TDWR, District 7, will be notified ten (10) days prior to the commencement of closure in the event that TDWR District 7 personnel desire to observe closure activities.

6.0 CLOSURE CERTIFICATION

Following completion of all closure activities, a registered professional engineer will provide a written certification documenting that closure has been completed in accordance with this plan. This written certification will be submitted to the TDWR.

7.0 POST-CLOSURE ACTIVITES

The storage area will continue to be used for containerized hazardous and nonhazardous wastes. An inventory of accumulation dates will be maintained to insure that hazardous wastes remain on-site for less than 90 days.

TEXAS WATER COMMISSION

September 23, 1985

Mr. W. F. McGuire, Manager
Environmental Protection Department
Houston Lighting and Power
P. O. Box 1700
Houston, Texas 77001

Dear Mr. McGuire:

Re: Solid Waste Registration No. 31633
Webster Generating Station
Full Facility Closure

We have completed a review of the hazardous waste facility closure plan, as detailed in your submittal of May 13, 1985. The subject closure plan describes the proposed method of closure for one drum storage area. The closure activities described in the plan have been evaluated pursuant to Title 31 of Texas Administrative Code (TAC) Sections 335.211-335.216, including the closure performance standard of 31 TAC 335.212.

This letter constitutes approval by the Executive Director of the hazardous waste facility closure plan, as described in your referenced submittal. Upon completion of the closure activities, certifications should be submitted by the owner or operator of the subject facility and by an independent Registered Professional Engineer that the hazardous waste management facility has been closed in accordance with the approved closure plan. Once the aforementioned certifications are received, we will resume processing of your Affidavit of Exclusion.

Should you have any questions regarding this evaluation, please contact Joe Gingerich of the Hazardous and Solid Waste Permits Section at AC512/463-8187 or AC512/463-8505.

Sincerely,

Larry R. Soward

Larry R. Soward
Executive Director

JG:bb
cc: Bill Brown, Field Operations Liaison
TWC District 7 Office - Deer Park

SEP 27 1985

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

LOIS

November 8, 1985

Mr. William N. Rhea
Hazardous Waste Management
Division (GH-HO)
Environmental Protection Agency
Region 6
1201 Elm Street
Interfirst II Building - 28th Floor
Dallas, Texas 75270

SUBJECT: RCRA SECTION 3007 INFORMATION REQUEST
HOUSTON LIGHTING & POWER COMPANY FACILITIES

Cedar Bayou Generating Station	#TXD000761841
Deepwater Generating Station	#TXD000837427
P. H. Robinson Generating Station	#TXD000837401
Webster Generating Station	#TXD000837369

Dear Mr. Rhea:

Pursuant to your letter requesting additional information as required by authority of Section 3007 of RCRA, 42 U.S.C. Section 6927, we are submitting information required in Enclosure 2, Item 1, for the subject Houston Lighting & Power Company (HL&P) facilities. Part B Hazardous Waste Permit Applications and certifications of compliance with groundwater monitoring and financial assurance were submitted to the Texas Water Commission (TWC) for the subject facilities on November 6, 1985. Please note that for the remaining HL&P facilities that received your information request, hazardous waste units at the facilities have been closed and certified as per TWC approved closure plans. Additionally, for those facilities, Affidavits of Exclusion from hazardous waste permitting requirements have been submitted to the Texas Water Commission. Therefore, the information provided in this response is limited to the subject facilities.

CEDAR BAYOU GENERATING STATION
FM 1405 Near Baytown
TXD000761841

Hazardous waste land disposal units located at this facility consist of the following:

- One clay lined earthen surface impoundment identified as the Demineralizer Regenerant Surface Impoundment utilized for the storage/equalization of demineralizer regenerant wastewater prior to treatment in a concrete wastewater treatment system and discharged under an existing NPDES/TWC permit.

- One clay lined earthen surface impoundment identified as the West Organic Metal Cleaning Impoundment utilized for the storage of demineralizer regenerant wastewater and occasional organic metal cleaning wastes generated during boiler cleaning operations.

DEEPWATER GENERATING STATION
Light Company Road at the Ship Channel
Pasadena, Texas
TXD000837427

Hazardous waste land disposal units located at this facility consist of the following:

- Two clay lined above grade surface impoundments identified as the Demineralizer Regenerant/Boiler Blowdown Surface Impoundments utilized for the storage/equalization of demineralizer regenerant and boiler blowdown wastewaters prior to treatment in a concrete wastewater treatment system and discharged under an existing NPDES/TWC permit.

P. H. ROBINSON GENERATING STATION
Highway 146
Baycliff, Texas
TXD000837401

Hazardous waste land disposal units located at this facility consist of the following:

- One clay lined earthen surface impoundment identified as the Demineralizer Regenerant Surface Impoundment utilized for the storage/equalization of demineralizer regenerant wastewater prior to being pumped to the Demineralizer Regenerant/Non-Oily Floor Drain Mixing Surface Impoundment discussed below.

- One clay lined earthen surface impoundment identified as the Demineralizer Regenerant/Non-Oily Floor Drain Mixing Impoundment utilized for the storage/equalization of demineralizer regenerant wastewater and non-oily floor

drainage prior to treatment in a concrete wastewater treatment system and discharged under an existing NPDES/TWC permit.

- One clay lined earthen surface impoundment identified as the Inorganic Metal Cleaning Surface Impoundment utilized for the occasional storage/equalization of inorganic metal cleaning waste associated with boiler cleaning operations. This wastewater is then pumped to a concrete wastewater treatment system where it is treated and discharged under an existing NPDES/TWC permit.

WEBSTER GENERATING STATION
19301 Old Galveston Road
Webster, Texas 77598
TXD0008377369

Hazardous waste land disposal units located at this facility consist of the following:

- One clay lined earthen surface impoundment identified as the Demineralizer Regenerant Surface Impoundment utilized for the storage/equalization of demineralizer regenerant wastewater prior to treatment in a concrete wastewater treatment system and discharged under an existing NPDES/TWC permit.

- One clay lined earthen surface impoundment identified as the Inorganic Metal Cleaning Surface Impoundment utilized for the occasional storage/equalization of inorganic metal cleaning wastewater associated with boiler cleaning operations. This wastewater is then pumped to a concrete wastewater treatment system where it is treated and discharged under an existing NPDES/TWC permit.

Closure plans for hazardous waste surface impoundments at Webster and P. H. Robinson were approved by the TWC on August 6, 1985. Closure plans for Cedar Bayou and Deepwater were submitted to the TWC on August 2, 1985, and approval is expected shortly. Of the hazardous waste disposal units discussed above, one surface impoundment at the Webster station (inorganic metal cleaning surface impoundment) has been closed and certified (November 4, 1985), and one surface impoundment at the P. H. Robinson station (inorganic metal cleaning surface impoundment), is currently undergoing closure. The remaining surface impoundments will undergo closure in 1986.

Should you have any questions pursuant to this matter, please contact Mr. R. T. Bye at 713/922-2201.

Sincerely,

W. B. McGuire
Manager, Environmental Protection Department

RTB/rmr
Attachments - 4 site topograpic maps

cc: Mr. Minor Hibbs; Hazardous & Solid Waste Division, TWC

Reference 11

31633

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

February 8, 1985

Mr. Ray Henry Austin, Head
Storage and Processing Facilities Unit
Solid Waste Section
Texas Department of Water Resources
P.O. Box 13087, Capitol Station
Austin, Texas 78711

Dear Mr. Austin:

SUBJECT: REVISED PART A APPLICATION
WEBSTER GENERATING STATION - TDWR 31633

The August 1980 Part A application for Houston Lighting & Power Company's Webster Generating Station has been updated. The attached revisions reflect current hazardous waste management practices at this facility.

Please call R. D. Groover at (713) 922-2195 if you have any questions concerning these revisions.

Sincerely,

W. F. McGuire, Manager
Environmental Protection Department

BAD/pm/L2

Attachments

cc: M. J. Coloton, TDWR District 7

Webster Generating Station Revised Part A Application

Appropriate tables/pages (attached) of the Part A application have been revised to reflect current hazardous waste management practices at Webster Generating Station.

The Part A application prepared in August 1980 listed several wastes/facility components which have been removed in the revised Part A. These wastes/components are discussed below:

1. Demineralizer Regenerant Inorganic Sludge

   This sludge accumulates at the bottom of the demineralizer impoundment from storage of demineralizer regenerant. Based on EP toxicity analyses submitted to your office on April 8, 1981 (letter attached). this waste has been declassified to a Class II waste (TWC 241470).

2. Metal Cleaning and Other Inorganic Sludge

   This sludge accumulates at the bottom of the inorganic impoundment from storage of hydrochloric acid boiler and equipment cleanings, and boiler blowdown. Based on EP toxicity analyses submitted to your office on April 8, 1981 (letter attached), this waste has been declassified to a Class II waste (TWC 241210).

3. Metal Cleaning Organic Acids/Metal Cleaning Organic Acids Collection Pond

   This waste is generated from ammoniated citric acid or hydroxyacetic-formic acid boiler and equipment cleanings. It is stored in an impoundment prior to being injected in an energy-producing boiler for incineration. Based on EP toxicity analyses submitted to your office on April 8, 1981 (letter attached), this waste has been declassified to a Class II waste (TWC 215290). The organic impoundment has, therefore, never received hazardous waste.

4. Metal Cleaning Organic Sludge

   This sludge accumulates at the bottom of the organic impoundment. Based on EP toxicity analyses submitted to your office on April 8, 1981 (letter attached), this waste has been declassified to a Class II waste (TWC 248990).

5. Chemical Waste Treatment System Sludge/Chemical Waste Treatment System & Sand Drying Beds

   A concrete chemical waste treatment system is used to treat demineralizer regenerant, inorganic metal cleaning waste (when produced), and boiler blowdown prior to NPDES discharge. The sludge which accumulates in the settling chamber of the treatment system is pumped to sand drying beds for dewatering and periodic off-site disposal. Based on EP toxicity analyses submitted to your office on February 23, 1981 (letter attached), this sludge has been declassified to a Class II waste (TWC 240540).

6. Waste Oil and Sludge/Waste Oil and Sludge Collection Facility

Oily sludge generated from the oily waste treatment system is classified as a Class I nonhazardous or Class II waste, depending on the amount of oil present in the sludge. The attached EP toxicity analyses of oily waste treatment system sludge indicate that no hazardous constituents are present.

7. Asbestos in Insulation

Insulation containing asbestos is classified as a Class I non-hazardous waste (TWC 170750). Asbestos, originally listed on the Part A application, has been delisted from the hazardous waste list (CFR 40.261).

[redacted]

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TDWR Sequence Number	TDWR Waste Code Number	EPA Hazard Code	EPA Hazardous Waste No.	Waste Management Activities (Check applicable items) Off-Site Disposal	On-Site Storage[1]	On-Site Processing[2]	On-Site Disposal	Estimated 1984 Annual Quantity Generated (lbs)	SIC Code and Process
Demineralizer Acid and Base Regeneration Wastewater	007 008	902570 902560	C	D002		X	X		$7.93X10^{7}$[a]	Water 4911 - Treatment
Inorganic Metal Cleaning Waste	010	903070	C	D002		X	X		0[b]	Boiler & Condenser C' 4911 -
Spent Solvents	005	910100	I	D001	X	X			0	4911 - Degreasing
Paint Thinner	006	910110	I,T	D001 F003,F005	X	X			$0.79X10^{3}$	4911 - Painting
Sandblast Grit		973280	E	D008	X	X			0	4911 - Painting
Liquid Paint Waste		910650	E	D008	X	X			$0.89X10^{3}$	4911 - Painting

a Total quantity discharged from demineralizer impoundment under NPDES permit (includes boiler blowdown).
b Inorganic metal cleaning waste is generated infrequently. Quantity generated in 1980 was approximately $1.25X10^{6}$ lbs.
c Projected quantity to be generated in 1985 is approximately $1X10^{4}$ lbs.

[1] "Storage" means the holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, or stored elsewhere.

[2] "Processing" means the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of hazardous waste, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste non-hazardous or less hazardous; safer for transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The "transfer" of solid waste for reuse or disposal as used above, does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the Executive Director determines that regulation of such activity is necessary to protect human health or the environment, the definition of "processing" does not include activities relating to those materials exempted by the Administrator of the EPA pursuant to the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq., as amended.

WEBSTER GENERATING STATION

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Spent Solvents
Process (see last column in Table III-1)	Degreasing
TDWR Sequence Number of Waste (if assigned)	005

Indicate the facility components used for storage/processing/disposal of the above-specified waste by entering the number of such facility components by which this waste is managed.

___ Lagoon/Pond (unlined)

___ Lagoon/Pond (lined)

___ Basin (earthen, above-grade lined)

___ Basin (earthen, above-grade unlined)

___ Basin (earthen, below-grade lined)

___ Basin (earthen, below-grade unlined)

___ Basin (concrete, above-grade lined)

___ Basin (concrete, above-grade unlined)

___ Basin (concrete, below-grade lined)

___ Basin (concrete, below-grade unlined)

___ Basin (other)

___ Pit (lined)

___ Pit (unlined)

___ Incinerator

___ Open Controlled Incineration Area

___ Boiler (energy-producing)

___ Landfill (sanitary)

___ Landfill (surface, open)

___ Landfill (other)

___ Landfarm

___ Landspreading Area

___ Spray Irrigation Area

___ Flood Irrigation Area

___ Septic Tank/Drain Field

___ Injection Well

___ Tank (surface storage)

___ Tank (sub-surface storage)

___ Tank (surface processing)

___ Tank (sub-surface processing)

___ Tank (other)

1 Drum Storage Area (open)

___ Other Container Storage Area

___ Other Container Storage Area

___ Other Container Storage Area (specify type of of container_____ _____)

___ Waste Pile Storage Area

1 Other (specify Mixed with waste oil for pickup by a waste oil recycling firm

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste: Paint Thinner

Process (see last column in Table III-1): Painting

TDWR Sequence Number of Waste (if assigned): 006

Indicate the facility components used for storage/processing/disposal of the above-specified waste by entering the number of such facility components by which this waste is managed.

___ Lagoon/Pond (unlined)

___ Lagoon/Pond (lined)

___ Basin (earthen, above-grade lined)

___ Basin (earthen, above-grade unlined)

___ Basin (earthen, below-grade lined)

___ Basin (earthen, below-grade unlined)

___ Basin (concrete, above-grade lined)

___ Basin (concrete, above-grade unlined)

___ Basin (concrete, below-grade lined)

___ Basin (concrete, below-grade unlined)

___ Basin (other)

___ Pit (lined)

___ Pit (unlined)

___ Incinerator

___ Open Controlled Incineration Area

___ Boiler (energy-producing)

___ Landfill (sanitary)

___ Landfill (surface, open)

___ Landfill (other)

___ Landfarm

___ Landspreading Area

___ Spray Irrigation Area

___ Flood Irrigation Area

___ Septic Tank/Drain Field

___ Injection Well

___ Tank (surface storage)

___ Tank (sub-surface storage)

___ Tank (surface processing)

___ Tank (sub-surface processing)

___ Tank (other)

1 Drum Storage Area (open)

___ Other Container Storage Area

___ Other Container Storage Area

___ Other Container Storage Area (specify type of container_____

_____)

___ Waste Pile Storage Area

___ Other (specify _____

_____)

WEBSTER GENERATING STATION

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Demineralizer Acid and Base Regeneration Wastewater
Process (see last column in Table III-1)	Water Treatment
TDWR Sequence Number of Waste (if assigned)	007, 008

Indicate the facility components used for storage/processing/disposal of the above-specified waste by entering the number of such facility components by which this waste is managed.

___ Lagoon/Pond (unlined)

_1_ Lagoon/Pond (lined)

___ Basin (earthen, above-grade lined)

___ Basin (earthen, above-grade unlined)

___ Basin (earthen, below-grade lined)

___ Basin (earthen, below-grade unlined)

___ Basin (concrete, above-grade lined)

___ Basin (concrete, above-grade unlined)

___ Basin (concrete, below-grade lined)

___ Basin (concrete, below-grade unlined)

___ Basin (other)

___ Pit (lined)

___ Pit (unlined)

___ Incinerator

___ Open Controlled Incineration Area

___ Boiler (energy-producing)

___ Landfill (sanitary)

___ Landfill (surface, open)

___ Landfill (other)

___ Landfarm

___ Landspreading Area

___ Spray Irrigation Area

___ Flood Irrigation Area

___ Septic Tank/Drain Field

___ Injection Well

___ Tank (surface storage)

___ Tank (sub-surface storage)

___ Tank (surface processing)

___ Tank (sub-surface processing)

___ Tank (other)

___ Drum Storage Area

___ Other Container Storage Area

___ Other Container Storage Area

___ Other Container Storage Area (specify type of of container_____ _____)

___ Waste Pile Storage Area

___ Other (specify _____ _____)

WEBSTER GENERATING STATION

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste Inorganic Metal Cleaning Waste

Process (see last column in Table III-1) Boiler & Condenser Cleaning

TDWR Sequence Number of Waste (if assigned) 010

Indicate the facility components used for storage/processing/disposal of the above-specified waste by entering the number of such facility components by which this waste is managed.

___ Lagoon/Pond (unlined)

1 Lagoon/Pond (lined)

___ Basin (earthen, above-grade lined)

___ Basin (earthen, above-grade unlined)

___ Basin (earthen, below-grade lined)

___ Basin (earthen, below-grade unlined)

___ Basin (concrete, above-grade lined)

___ Basin (concrete, above-grade unlined)

___ Basin (concrete, below-grade lined)

___ Basin (concrete, below-grade unlined)

___ Basin (other)

___ Pit (lined)

___ Pit (unlined)

___ Incinerator

___ Open Controlled Incineration Area

___ Boiler (energy-producing)

___ Landfill (sanitary)

___ Landfill (surface, open)

___ Landfill (other)

___ Landfarm

___ Landspreading Area

___ Spray Irrigation Area

___ Flood Irrigation Area

___ Septic Tank/Drain Field

___ Injection Well

___ Tank (surface storage)

___ Tank (sub-surface storage)

___ Tank (surface processing)

___ Tank (sub-surface processing)

___ Tank (other)

___ Drum Storage Area

___ Other Container Storage Area

___ Other Container Storage Area

___ Other Container Storage Area (specify type of of container_____ _____)

___ Waste Pile Storage Area

___ Other (specify _____ _____)

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste: Sandblast Grit

Process (see last column in Table III-1): Painting

TDWR Sequence Number of Waste (if assigned):

Indicate the facility components used for storage/processing/disposal of the above-specified waste by entering the number of such facility components by which this waste is managed.

___ Lagoon/Pond (unlined)

___ Lagoon/Pond (lined)

___ Basin (earthen, above-grade lined)

___ Basin (earthen, above-grade unlined)

___ Basin (earthen, below-grade lined)

___ Basin (earthen, below-grade unlined)

___ Basin (concrete, above-grade lined)

___ Basin (concrete, above-grade unlined)

___ Basin (concrete, below-grade lined)

___ Basin (concrete, below-grade unlined)

___ Basin (other)

___ Pit (lined)

___ Pit (unlined)

___ Incinerator

___ Open Controlled Incineration Area

___ Boiler (energy-producing)

___ Landfill (sanitary)

___ Landfill (surface, open)

___ Landfill (other)

___ Landfarm

___ Landspreading Area

___ Spray Irrigation Area

___ Flood Irrigation Area

___ Septic Tank/Drain Field

___ Injection Well

___ Tank (surface storage)

___ Tank (sub-surface storage)

___ Tank (surface processing)

___ Tank (sub-surface processing)

___ Tank (other)

___ Drum Storage Area

___ Other Container Storage Area

___ Other Container Storage Area

1 Other Container Storage Area (specify type of of container (~~covered~~ bins) _____)

___ Waste Pile Storage Area

___ Other (specify _____ _____)

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste Liquid Paint Wastes

Process (see last column in Table III-1) Painting

TDWR Sequence Number of Waste (if assigned)

Indicate the facility components used for storage/processing/disposal of the above-specified waste by entering the number of such facility components by which this waste is managed.

___ Lagoon/Pond (unlined)

___ Lagoon/Pond (lined)

___ Basin (earthen, above-grade lined)

___ Basin (earthen, above-grade unlined)

___ Basin (earthen, below-grade lined)

___ Basin (earthen, below-grade unlined)

___ Basin (concrete, above-grade lined)

___ Basin (concrete, above-grade unlined)

___ Basin (concrete, below-grade lined)

___ Basin (concrete, below-grade unlined)

___ Basin (other)

___ Pit (lined)

___ Pit (unlined)

___ Incinerator

___ Open Controlled Incineration Area

___ Boiler (energy-producing)

___ Landfill (sanitary)

___ Landfill (surface, open)

___ Landfill (other)

___ Landfarm

___ Landspreading Area

___ Spray Irrigation Area

___ Flood Irrigation Area

___ Septic Tank/Drain Field

___ Injection Well

___ Tank (surface storage)

___ Tank (sub-surface storage)

___ Tank (surface processing)

___ Tank (sub-surface processing)

___ Tank (other)

1 Drum Storage Area (open)

___ Other Container Storage Area

___ Other Container Storage Area

___ Other Container Storage Area (specify type of

of container_____

_____)

___ Waste Pile Storage Area

___ Other (specify _____

_____)

Webster Generating Station

Table III-4 Hazardous Waste Facility Components List

Facility Component Name	TDWR Seq. No.	Status: Inactive	Status: Active	Status: Proposed	Design Capacity (cu yds)	Design Capacity (gal)	Design Capacity (lbs)	Number of Years Utilized	Date in Service
Lagoon/Pond (lined)	01		X			372,000		14	1970
Verbal Description: Clay lined pond for the collection of demineralizer regeneration wastes prior to treatment. Treated wastewater is discharged via NPDES permit.									
Lagoon/Pond (lined	02		X			270,000		7	1977
Verbal Description: Clay lined pond for the collection of metal cleaning inorganic acid wastes from boiler and equipment cleaning operations prior to treatment. Treated wastewater is discharged via NPDES permit.									
Verbal Description:									
Drum Storage Area (open)	05		X			NA		4	1980
Verbal Description: Drum storage area for the collection of waste solvents, waste paint thinners, and liquid paint prior to off-site disposal.									
Other Container Storage Area				X	NA			NA	NA
Verbal Description: Covered bins for storage of blasting material prior to off-site disposal									
Verbal Description:									

Attachment G

Webster Generating Station

Process Description for Hazardous Waste Streams

1. Demineralizer Acid and Base Regenerant Wastewater (EPA Hazard Code C)

Demineralizer regenerant waste is collected in the demineralizer impoundment. The waste is then pumped to the chemical waste treatment system for pH adjustment and suspended solids removal. Treated wastewater is discharged in accordance with the NPDES permit.

2. Inorganic Metal Cleaning Waste (EPA Hazard Code C)

Inorganic metal cleaning waste is collected in the inorganic impoundment. The waste is then pumped to the chemical waste treatment system for pH adjustment, suspended solids and metals removal. Treated wastewater is discharged in accordance with the NPDES permit.

3. Spent Solvents (EPA Hazard Code I)

Spent solvents are collected in drums or mixed with waste oil for recycling.

4. Paint Thinner (EPA Hazard Code I, T)

Paint thinner waste is collected in drums. These drums are temporarily stored prior to off-site disposal.

5. Sandblast Grit (EPA Hazard Code E)

Waste blasting material is collected in bins for temporary storage prior to off-site disposal.

6. Liquid Paint Wastes (EPA Hazard Code E)

Liquid paint waste is collected in drums. These drums are temporarily stored prior to off-site disposal.

APR
Laboratories

ANALYTICAL
PETROLEUM
RESEARCH

HOUSTON LIGHTING & POWER
P. O. BOX 1700
HOUSTON, TEXAS 77001
ATTENTION: MS. ELLEN ZAMPELLO

DATE: SEPTEMBER 25, 1984
INVOICE NO.: 10582
CERTIFICATE NO.: 14438

SAMPLE DESCRIPTION: WEB FLOOR DRAIN OIL SUMP (Waste Oil)

SAMPLE DATE: SEPTEMBER 7, 1984
DATE RECEIVED: SEPTEMBER 7, 1984

IGNITABILITY (FLASH POINT)	> 212 °F
CORROSIVITY	pH = 6.48
REACTIVITY	NONE

E P TOXICITY:

ANALYSIS	RESULTS MG/L	ANALYSIS	RESULTS MG/L
ARSENIC	<0.02	LEAD	<0.1
BARIUM	<0.3	MERCURY	<0.005
CADMIUM	<0.01	SELENIUM	<0.02
CHROMIUM	<0.1	SILVER	<0.02

A P R LABORATORIES

Sammy Russo

RECEIVED
SEP 28 1984

4324 Highway 3 * Suite 129 * Dickinson, Texas 77539 * Phone (713) 337-6700

A P R
Laboratories

ANALYTICAL
PETROLEUM
RESEARCH

HOUSTON LIGHTING & POWER
P. O. BOX 1700
HOUSTON, TEXAS 77001
ATTENTION: MS. ELLEN ZAMPELLO

DATE: SEPTEMBER 25, 1984
INVOICE NO.: 10582
CERTIFICATE NO.: 14439

SAMPLE DESCRIPTION: WEB GAS TURBINE OIL TRAP (Waste Oil)

SAMPLE DATE: SEPT. 7, 1984

DATE RECEIVED: SEPT. 7, 1984

IGNITABILITY (FLASH POINT)	) 212 °F
CORROSIVITY	pH = 5.15
REACTIVITY	NONE

E P TOXICITY:

ANALYSIS	RESULTS MG/L	ANALYSIS	RESULTS MG/L
ARSENIC	<0.02	LEAD	<0.1
BARIUM	<0.3	MERCURY	<0.005
CADMIUM	<0.01	SELENIUM	<0.01
CHROMIUM	<0.1	SILVER	<0.01

ENDRIN	<0.02
LINDANE	<0.4
METHOXYCHLOR	<2
TOXAPHENE	<0.2
2,4 -DICHLOROPHENOXYACETIC ACID (2, 4-D)	<1
2,4,5-TP (SILVEX)	<1

RECEIVED
SEP 28 1984

A P R LABORATORIES

Sammy Russo

Sammy Russo
4324 Highway 3 * Suite 129 * Dickinson, Texas 77539 * Phone (713) 337-6700

31633

TEXAS DEPARTMENT OF WATER RESOURCES

1700 N. Congress Avenue
Austin, Texas

June 12, 1984

Kimble RK
Ferguson SE
Barker BB
Dixon for

Mr. W.F. McGuire, Manager
Environmental Protection Department
Houston Lighting & Power
P.O. Box 1700
Houston, Texas 77001

Dear Mr. McGuire:

Re: RCRA Financial Assurance
TDWR Registration Numbers 31632, 31633, 31634, 31635, 31636, 31637
31638, and 31639

The documents submitted for financial assurance of the above referenced facility(ies) have been reviewed and determined to be complete and in accordance with the applicable regulations. Any revisions or adjustments involving financial assurance of the facility(ies) should be submitted in writing to the attention of Mr. Russell Kimble of our Enforcement and Field Operations Division.

Sincerely,

Bryan W. Dixon, P.E., Chief
Solid Waste and Spill Response Section
Enforcement and Field Operations Division

RSK:jr

ccs: Jay Snow, Permits Division, Industrial Solid Waste Section
Texas Department of Water Resources District 7 Office

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

May 29, 1984

Mr. Paul S. Lewis, Geologist
Enforcement & Field Operations Division
Texas Department of Water Resources
P. O. Box 13087, Capitol Station
Austin, Texas 78711

SUBJECT: GROUND-WATER QUALITY ASSESSMENT PLAN, IMPLEMENTATION STUDIES
S. R. Bertron Generating Station, TDWR Reg. No. 31637
H. O. Clarke Generating Station, TDWR Reg. No. 31635
Deepwater Generating Station, TDWR Reg. No. 31632
Greens Bayou Generating Station, TDWR Reg. No. 31634
P. H. Robinson Generating Station, TDWR Reg. No. 31638
Webster Generating Station, TDWR Reg. No. [redacted]
T. H. Wharton Generating Station, TDWR Reg. No. 31636

Dear Mr. Lewis:

Enclosed are two (2) copies each of the ground-water quality plan implementation studies for the above-referenced facilities. Please contact E. A. Feith (922-2205) or R. D. Groover (922-2195) if you have any questions concerning this material. As discussed with you previously, Mr. Feith and Mr. Groover as well as representatives of Underground Resource Management, Inc. plan to meet to discuss the reports with you on Thursday, May 31, 1984 at 10:00 a.m.

Sincerely,

W. F. McGuire, Manager
Environmental Protection Department

RDG/bwt

Enclosures

31633

PS Form 3811, July 1

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
☐ Show to whom and date delivered ..... ——— ¢

HOUSTON LIGHTING & POWER CO. 316
WEBSTER GENERATING STATION
P O BOX 1700 - W.F.MCGUIRE
HOUSTON, TEXAS 77001
ATTN: W F MCGUIRE

☐ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
12284

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
L V Spivak

5. DATE OF DELIVERY
MAR 29 1984

6. POSTMARK
(may be on reverse side)

8. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1983-379-693

MEMORANDUM REPORT

McClelland engineers, inc. / geotechnical consultants

6100 HILLCROFT / HOUSTON, TEXAS 77081
TEL 713 / 772-3701 / TELEX 762-447

SUBJECT: Monitor Well Installation
Webster Electric Generating Station
Webster, Texas

DATE: July 22, 1982

REPORT NO.: 0182-0119-1

TO: Houston Lighting & Power Company
12301 Kurland Drive
Houston, Texas 77034

Attention: Mr. E. A. Feith

Introduction

Presented here is the report of our installation of monitor wells at your Webster Electric Generating Station in Webster, Texas. This work was performed in general accordance with our proposal dated June 1, 1982 and was verbally authorized by Mr. James Mertink on May 4, 1982.

Field Services

Four monitor wells were installed in the Webster Generating Station at the locations shown on Plate 1. The locations were selected by HL&P and were confirmed by the Texas Department of Water Resources as being acceptable. Holes for the wells were drilled with a medium-duty truck-mounted rig using wet rotary techniques. A geotechnical engineer logged the well holes based on soil cuttings and drilling characteristics. A description of the soils encountered is included in the next section of this report.

As shown on Plate 2, a monitor well consists of a 4-in.-diameter PVC riser pipe installed in a 7-in.-diameter hole. The PVC riser pipe is provided with 0.02-in.-wide slots and is surrounded by filter sand in the monitoring zone. A 1-ft-thick layer of bentonite is placed on top of the sand filter. Soil cuttings from the boring are backfilled in the annulus from the top of the bentonite to about 4 ft below ground surface. Cement grout is placed to fill the remaining annulus to the ground surface. The well is developed by blowing the water and any sediment out of the riser pipe with compressed air.

General Soil Conditions

The general soil stratigraphy at each well location as determined by logging the soil cuttings in the returning wash water and by observing the drilling characteristics is given below.

Monitor Well W-1. Clay was observed to a depth of 25 ft. Underlying the clay, silty clay with seams and thin layers of sandy silt and clayey silt was found to the bottom of the hole to 29-ft depth.

Monitor Well W-2. Fill consisting of clay and silty clay with calcareous deposits was observed to a depth of 12 ft. Circulation of drilling fluid was lost at 7-ft depth due to a thin layer of highly permeable organic silt. Natural clay is present from 12-ft to the 30-ft depth drilled; the drilling indicates silt seams from 24-ft to 27-ft depth.

Monitor Well W-3. A clay profile was observed from the ground surface to the 30-ft depth of the hole. The clay was interbedded with silt from 21-ft to 22-ft depth.

Monitor Well W-4. Clay was observed to a depth of 17.5 ft and from [redacted] ft depth.

* * *

The following illustrations are attached and complete this report:

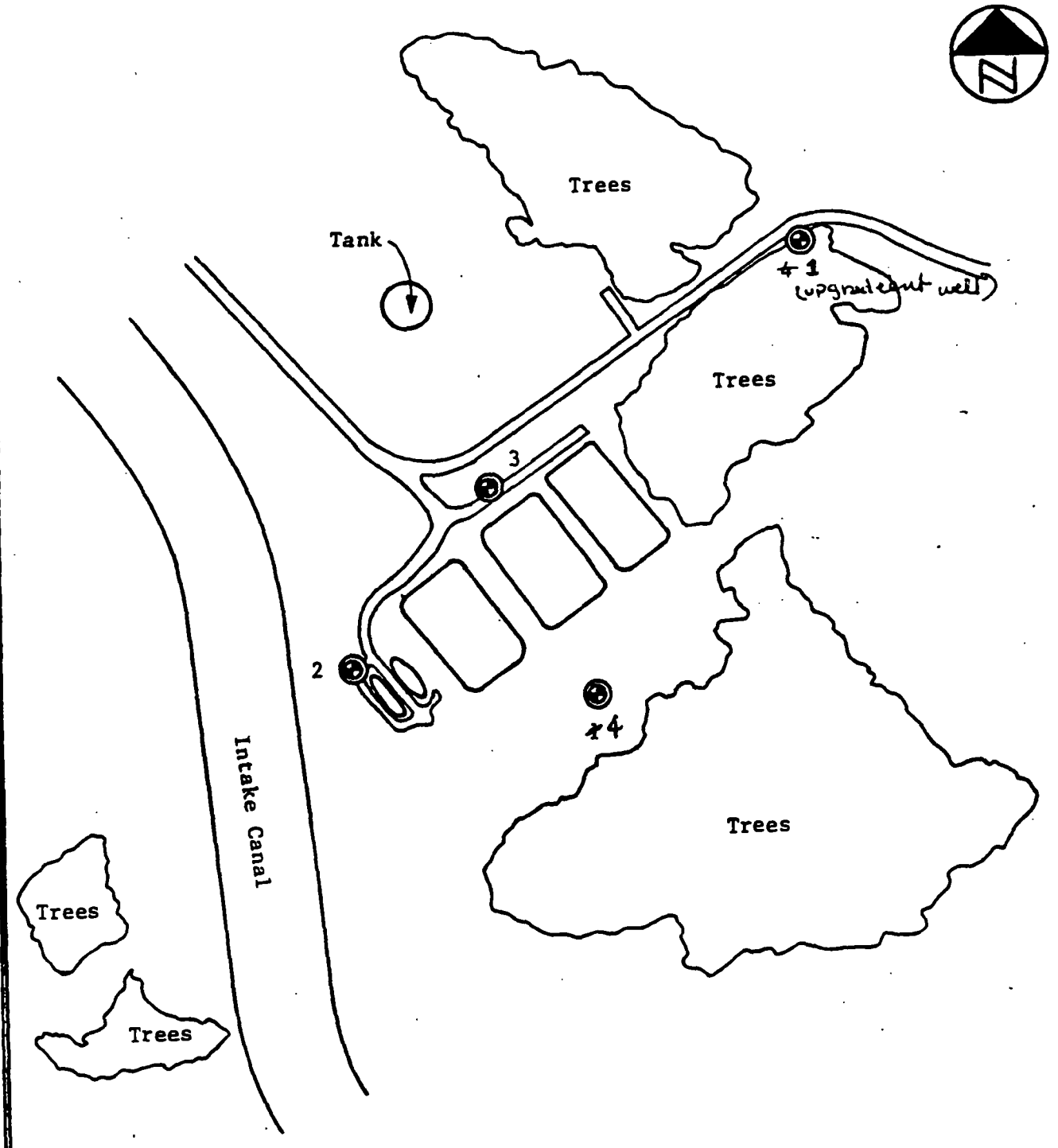
Plate 1	Site Plan
Plate 2	Monitor Well Installation Data

McCLELLAND ENGINEERS, INC.

Edward J. Ulrich, Jr., P.E.
Engineer Manager

STATE OF TEXAS
E. J. ULRICH, JR.
35624
REGISTERED
PROFESSIONAL ENGINEER

JAM/EJU/dka
Copies Submitted: (6)



LEGEND:

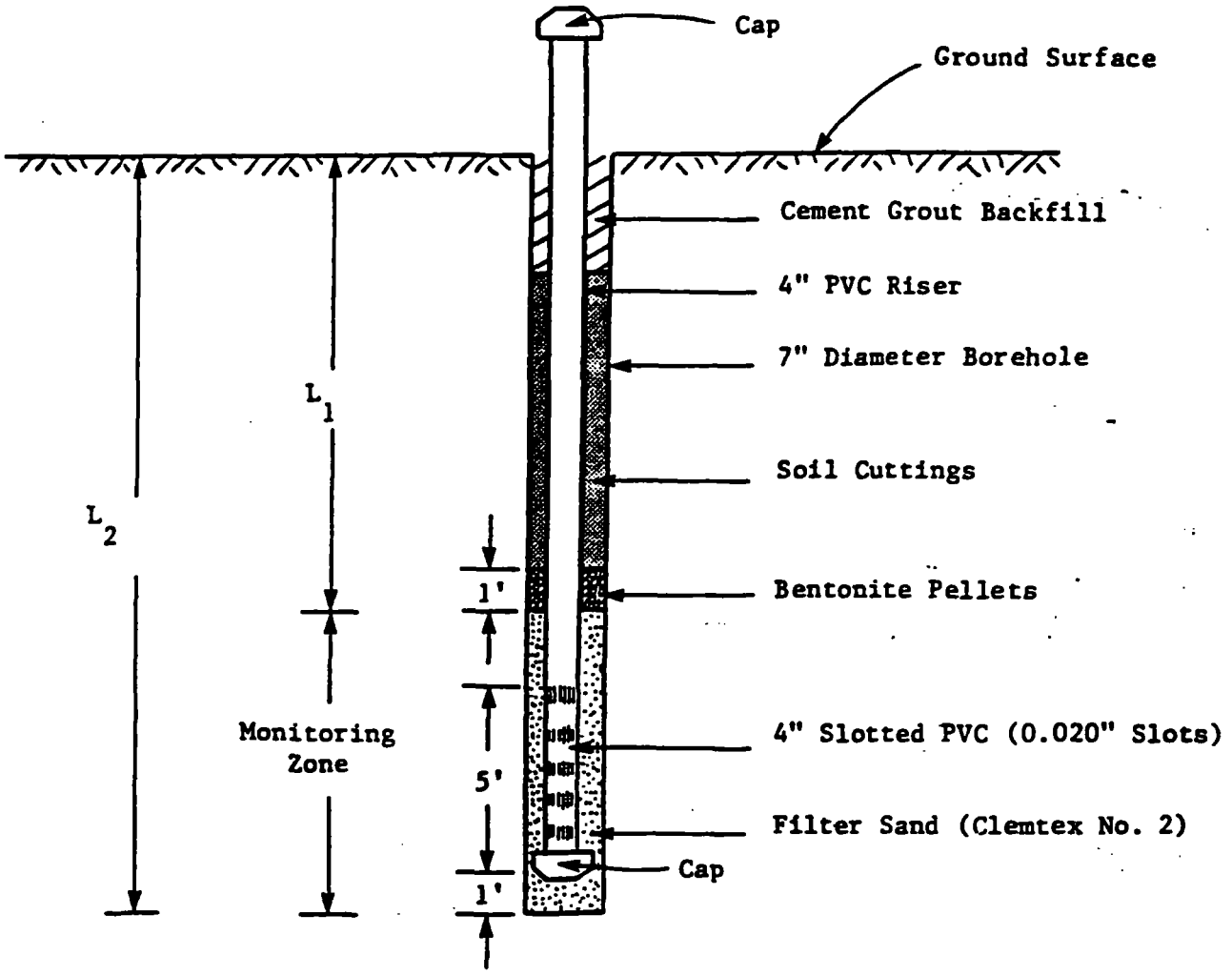
Monitor Wells

0 250 500 ft

SITE PLAN
Webster Generating Station

PLATE 1

McCLELLAND ENGINEERS



Well No.	Installation Date	L_1, Ft	L_2, Ft	Granular Layer Description	From, Ft	To, Ft
4A	5-20-82	18	28	Clayey Silt Seams	25	29
2	5-18-82	18	29	Silt Seams	24	27
3	5-17-82	18	28	Silt Seams	21	22
1A	5-18-82	10	21	Sandy Silt	17.5	19.5

MONITOR WELL INSTALLATION DATA

Webster Generating Station

FORM SUBMITTED

By: _____

Date: _____

MAJOR FACILITIES STATUS SHEET
Initial ✓ Update _____

0484 V2

4/18/84 1212

ID No.: TXD007837349 Registration/Permit No.: 31433

Facility Name: HL+P Webster Station District No.: Dist 7

1. Ground Water Monitoring Status

Detection		Waiver	
Assessment	✓	NA	

2. Ground Water Monitoring Well System

a. Evaluated?	NA		NE	DATE EVAL'D
b. Adequate?	YES	✓	NO	

3. Ground Water Sampling, Analysis and Evaluation Program

a. Evaluated?	NA		NE	DATE EVAL'D
b. Adequate?	YES	✓	NO	

4. Notice of Significant Increase in Parameter Concentrations

Submitted?	NA		NO	DATE SUB'D Oct 1984

5. Ground Water Quality Assessment Report Will submitt May 84

a. Submitted?	NA		NO	DATE SUB'D
b. Evaluated?	NE		DATE EVAL'D	
c. Adequate?	YES		NO	
d. Showed hazardous waste constituents in ground water?				
	YES		NO	

6. Waiver Demonstration

a. Evaluated?	NA	✓	NE	DATE EVAL'D
b. Adequate?	YES		NO	

7. Ground Water Monitoring Records

a. Evaluated?	NA		NE	DATE EVAL'D
b. Adequate?	YES	✓	NP	

ID # _____

8. Activities Subject to Closure/Post-Closure

Landfill ___ | Incinerator ___
Surface Impoundment ✓ | Waste Pile ___
Land Treatment/Application ___ | Other (Specify) ___

9. Closure Plan

a. Evaluated? NE ___ DATE EVAL'D _____
b. Adequate? YES ___ NO ___

10. Closure Cost Estimate

a. Evaluated? NA ___ NE ___ DATE EVAL'D _____
b. Adequate? YES ✓ NO ___
c. Amount: $ _____ UNKNOWN ___

11. Closure Assurance Instrument(s)

a. Evaluated? NA ___ NE ✓ DATE EVAL'D _____
b. Adequate? YES ___ NO ___ NO INSTRUMENT ✓
c. Type(s):

TRUST FUND ___ | INSURANCE ___
FINANCIAL BOND ___ | FINANCIAL TEST ___
PERFORMANCE BOND ___ | CORPORATE GUARANTEE ___
LETTER OF CREDIT ___ | STATE GUARANTEE ___
| OTHER STATE MECHANISM ___

12. Post-Closure Plan

a. Evaluated? NA ✓ NE ___ DATE EVAL'D ___
b. Adequate? YES ___ NO ___

13. Post-Closure Cost Estimate

a. Evaluated? NA ✓ NE ___ DATE EVAL'D _____
b. Adequate? YES ___ NO ___
c. Amount: $ _____ UNKNOWN ___

14. Post-Closure Assurance Instrument(s)

a. Evaluated? NA ✓ NE ___ DATE EVAL'D ___
b. Adequate? YES ___ NO ___ NO INSTRUMENT ___
c. Type(s):

TRUST FUND ___ | INSURANCE ___
FINANCIAL BOND ___ | FINANCIAL TEST ___
PERFORMANCE BOND ___ | CORPORATE GUARANTEE ___
LETTER OF CREDIT ___ | STATE GUARANTEE ___
| OTHER STATE MECHANISM ___

ID # _____

15. Sudden Liability Instrument(s)

a. Evaluated? NA___ NE___ DATE EVAL'D July 82
b. Adequate? YES___ NO___ NO INSTRUMENT___
c. Amount: $_____ per occurrence, $_____ annual aggregate
d. Type(s):
INSURANCE POLICY___ STATE GUARANTEE___
FINANCIAL TEST___ OTHER STATE MECHANISM___

16. Nonsudden Liability Instrument(s)

a. Evaluated? NA___ NE___ DATE EVAL'D July 82
b. Adequate? YES___ NO___ NO INSTRUMENT___
c. Amount: $_____ per occurrence, $_____ annual aggregate
d. Type(s):
INSURANCE POLICY___ STATE GUARANTEE___
FINANCIAL TEST___ OTHER STATE MECHANISM___

17. Closure Process

a. Process Begun? NO ✓ DATE BEGUN_____
b. In accordance with approved plan and required procedures? YES___ NO___
c. Closure certifications received? NO___ DATE REC'D_____
d. Facility released from closure assurance and liability requirements? NA___ NO___ DATE RELEASED July 82

18. Post-Closure Process

a. Process Begun? NA ✓ NO___ DATE BEGUN_____
b. In accordance with approved plan and required procedures? YES___ NO___
c. Survey plat/Record of wastes received? NO___ DATE REC'D___
d. Post-closure period completed? NO___ DATE COMPLETED _____
e. Facility released from post-closure assurance requirements? NA___ NO___ DATE RELEASED _____

19. Permit Application

a. Called? NO ✓ DATE CALLED _____
b. Reason? GROUND WATER ___ FINANCIAL ASSURANCE ___
CLOSURE ___ LIABILITY COVERAGE ___
OTHER ___

MEMORANDUM REPORT

McClelland engineers, inc. / geotechnical consultants

6100 HILLCROFT / HOUSTON, TEXAS 77081
TEL. 713 / 772-3701 / TELEX 762-447

SUBJECT: Geotechnical Investigation
Class I Disposal Ponds
Webster Generating Station
Webster, Texas

DATE: November 16, 1981

REPORT NO.: 0181-0318-4

TO: Houston Lighting & Power Company
12301 Kurland Drive
Houston, Texas 77034

Attention: Mr. James R. Mertink

Introduction

Presented here are the results of our investigation of soil conditions at the site of two Class I disposal ponds at your Webster Generating Station in Webster, Texas. This study was performed in general accordance with our proposal dated August 12, 1981 and was authorized by your Purchase Order No. M-76559 dated October 9, 1981.

A Demineralizer Regenerant Collection (D.R.C.) pond and an Inorganic Metal Cleaning (I.M.C.) collection pond are presently in use at the plant site. The ponds are about 5 ft deep and were constructed at grade as open-cut excavations.

We understand that the Texas Department of Water Resources indicated that by November 19, 1981, the owners of hazardous waste impoundments must have a groundwater monitoring program. This requirement may be waived if there is a low potential for migration of hazardous waste from the facility. The purposes of this investigation were to obtain information on the soil conditions at the site and evaluate the potential for migration of waste from the ponds to the uppermost aquifer.

To accomplish our objectives, the study included the following phases:

- review of previous geotechnical work performed in the Webster Plant
- field investigation
- laboratory investigation
- engineering analyses

Principal Findings

The principal findings of this study, based on our soil borings and laboratory tests, are presented below.

(1) The ponds are located in clay to a depth of about 20 ft.

(2) The clay is highly plastic and relatively impermeable with average coefficients of permeability of about 5.2×10^{-9}, 5.6×10^{-9}, and 2.2×10^{-9} cm/sec for deionized water, demineralizer regenerant, and inorganic metal cleanser, respectively.

(3) The soil environment for the ponds is considered acceptable for Class I disposal ponds in accordance with the Texas Department of Water Resources Guidelines (Revised March 1, 1978) for unlined ponds. We therefore believe that the pond environments present a low potential for migration of waste.

Field Investigation

Information on soil conditions at the site was obtained by reviewing previous geotechnical work performed in the Webster Plant and by drilling two 30-ft and three 25-ft depth undisturbed-sample borings to supplement the available data. The borings are numbered 1 through 6 and are shown on Plate 1. The borings were drilled with a medium-duty truck-mounted rotary rig. Individual boring logs are presented on Plates 2 through 7. Most of the symbols and terms used on the logs are identified on Plate 8.

Undisturbed samples were obtained in the boring at 2-ft intervals from the ground surface to a depth of about 12 ft, at 15 ft, and at 5-ft intervals thereafter. Samples were obtained with a 3-in.-diameter thin-walled tube hydraulically pushed into the soil.

The samples recovered from the boreholes were removed from the sampling devices, examined, and classified by our soil technician. Representative portions of each sample obtained were sealed in appropriate containers and transported to our laboratory. The boreholes were sealed with a cement grout upon completion of drilling.

Laboratory Investigation

The laboratory soil tests were directed primarily toward evaluating soil classification and permeability. The following tabulation gives the type and number of tests performed.

Type of Test	Number of Tests
Penetrometer	55
Liquid and Plastic Limits	2
pH	2
Falling Head Permeability	6

Water content and unit dry weight determinations were made routinely on each permeability test specimen. The results of the pH and permeability tests are presented on Plate 9. All other test results are presented graphically on the boring logs.

Site Conditions

The site is relatively flat at about El +14. Soft to very stiff clay and silty clay is present over the site to a depth of about 20 ft. This clay is highly plastic and is classified as CH in the Unified Classification System. Between about 20 and 26-ft-depth, sandy to clayey silt was encountered. This silt is underlain by stiff clay to the maximum depth explored, 30 ft.

Conclusions

Our borings indicate that clays are present at the site to a depth of about 20 ft, which is 15 ft below the bottoms of the ponds. This satisfies the requirements of the Texas Department of Water Resources Guidelines (Revised March 1, 1978) for unlined Class I disposal ponds. We therefore believe that the pond environments present a low potential for migration of waste.

* * *

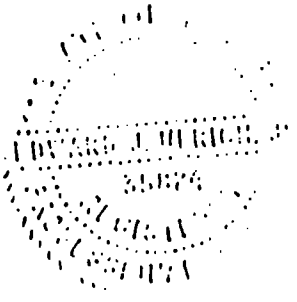
The following illustrations are attached and complete this report.

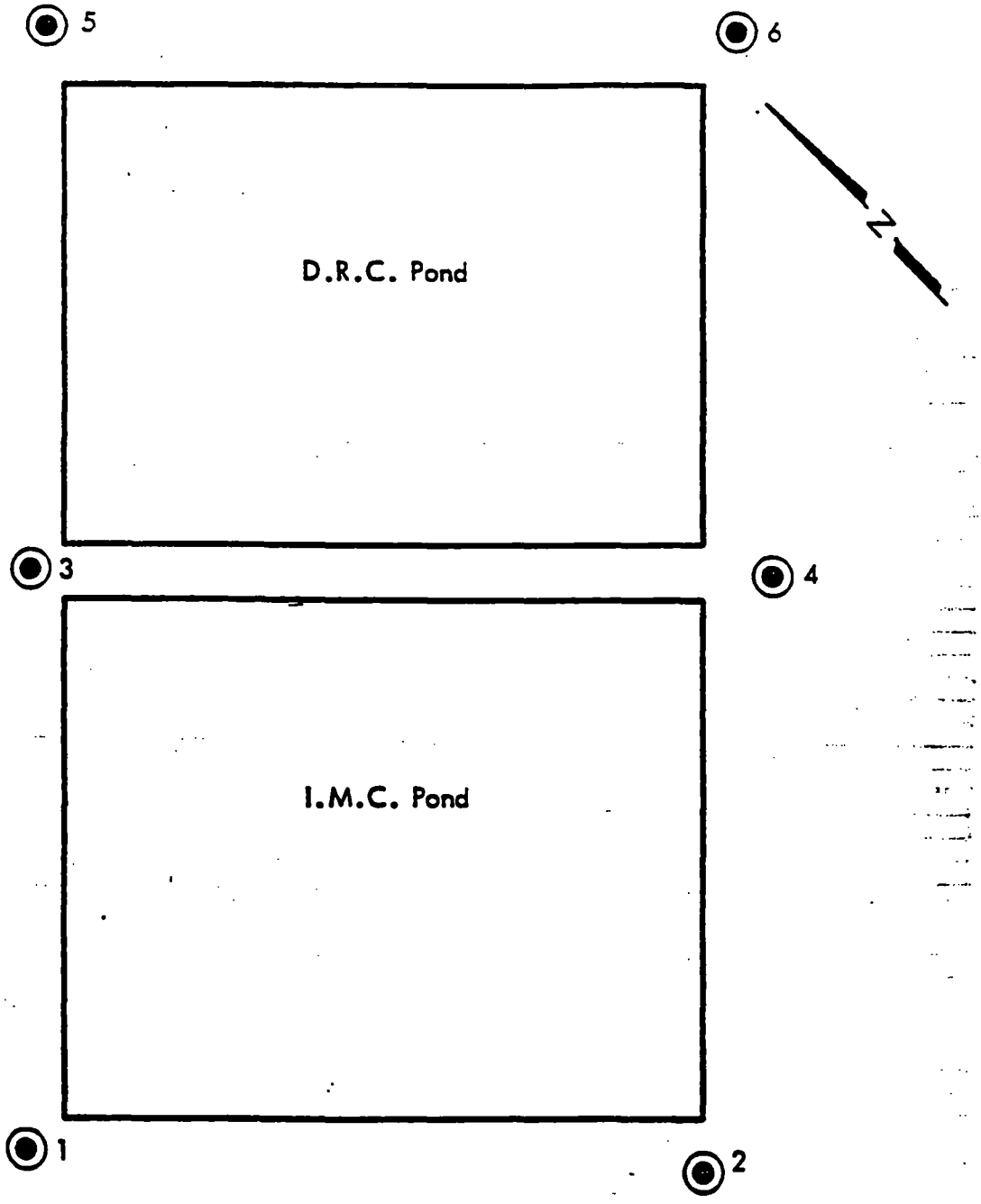
Plate 1	Site Plan
Plates 2 through 7	Logs of Borings
Plate 8	Terms and Symbols Used on Boring Logs
Plate 9	Permeability Test Results

McCLELLAND ENGINEERS, INC.

Edward J. Ulrich, Jr., P.E.
Engineer Manager

JAM/EJU/dka
Copies Submitted: (6)





Note:
Locations are approximate

PLAN OF BORINGS
Webster Generating Station

0 50 100 Feet

LOG OF BORING NO. 1

CLASS I DISPOSAL PONDS
WEBSTER GENERATING STATION
WEBSTER, TEXAS

LOCATION : See Plate 1

DEPTH, FT	SYMBOL	SAMPLES		BLOWS PER FT	% PASSING NO 200 SIEVE	UNIT DRY WT LB PER CU FT	WATER CONTENT, % Plastic Limit / Natural / Liquid Limit (20 40 60)	UNDRAINED SHEAR STRENGTH KIPS PER SQ FT (0.5 1.0 1.5 2.0 2.5) KILOPASCALS (25 50 75 100 125)	DEPTH, M
			Soft brown clay with roots			106			1
5			Stiff brown silty clay with roots -firm to 6' -dark gray, 5' to 9'						2
			-light gray below 9'						
10			Stiff reddish brown clay with calcareous nodules						3
			-brownish yellow and light gray below 13'						4
15									5
									6
20									7
			Reddish brown sandy silt						
25									8
			Stiff brown clay with calcareous nodules						9
30									10
35									11
									12
40									13
45									14
									15
50									16

JOB NO. : 0181-0318
COMPLETION DEPTH : 29.5'
DATE : October 12, 1981

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND
- ● Unconfined Compression - -
- ▲ Unconsolidated-Undrained Triaxial Compression
- ◆ Miniature Vane
- *(open symbols above indicate remolded tests)*
- ◈ Torvane
- ⊠ Hand Penetrometer

McCLELLAND ENGINEERS

PLATE 2

LOG OF BORING NO. 2
CLASS I DISPOSAL PONDS
WEBSTER GENERATING STATION
WEBSTER, TEXAS

LOCATION . See Plate 1

DEPTH, FT	SYMBOL	SAMPLES		BLOWS PER FT	% PASSING NO. 200 SIEVE	UNIT DRY WT LB PER CU FT	WATER CONTENT, % (Plastic Limit / Natural / Liquid Limit; 20, 40, 60)	UNDRAINED SHEAR STRENGTH KIPS PER SQ FT (0.5, 1.0, 1.5, 2.0, 2.5) / KILOPASCALS (25, 50, 75, 100, 125)	DEPTH, M
0			Very stiff brown clay -with ferrous and calcareous nodules and roots to 13'						0
5			-dark brown, 6' to 9'						1
10			-light gray, 10' to 13'						2
			-stiff tan and light gray below 13'						3
15									4
									5
20									6
			Reddish brown clayey silt with sand pockets						7
25									8
			Stiff tan clay with ferrous nodules						9
30									10
35									11
									12
40									13
45									14
									15
50									16

JOB NO. : 0181-0318
COMPLETION DEPTH : 29.5'
DATE : October 12, 1981

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND
- ● Unconfined Compression
- ▲ Unconsolidated-Undrained Triaxial Compression
- ✦ Miniature Vane
- *(open symbols above indicate remolded tests)*
- ✣ Torvane
- ⊠ Hand Penetrometer

PLATE 2

LOG OF BORING NO. 3

CLASS I DISPOSAL PONDS
WEBSTER GENERATING STATION
WEBSTER, TEXAS

LOCATION : See Plate 1

DEPTH, FT	SYMBOL	SAMPLES		BLOWS PER FT	% PASSING NO. 200 SIEVE	UNIT DRY WT LB PER CU FT
0			Stiff dark brown clay			
			-with gravel to 3'			
			-reddish brown sand with roots, 1' to2'			
			-silty 2' to 3'			
5			-very stiff to13' to 19' and below 22'			
			-brownish yellow, 5' to 6'			
			-tan and reddish brown, slickensided with calcareous and ferrous nodules, 6' to 10'			
10			-brownish yellow and light gray, slickensided, 10' to 13'			
15						
20			-tan with sand pockets below 23'			
25			Reddish brown clayey silt			
30						
35						
40						
45						
50						

WATER CONTENT %

Plastic Limit — Natural — Liquid Limit

20 40 60

UNDRAINED SHEAR STRENGTH

KIPS PER SQ FT: 0.5 1.0 1.5 2.0 2.5

KILOPASCALS: 25 50 75 100 125

DEPTH, M: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

JOB NO. : 0181-0318

COMPLETION DEPTH : 24.5'

DATE : October 12, 1981

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND

- ● Unconfined Compression
- ▲ Unconsolidated-Undrained Triaxial Compression
- ✦ Miniature Vane

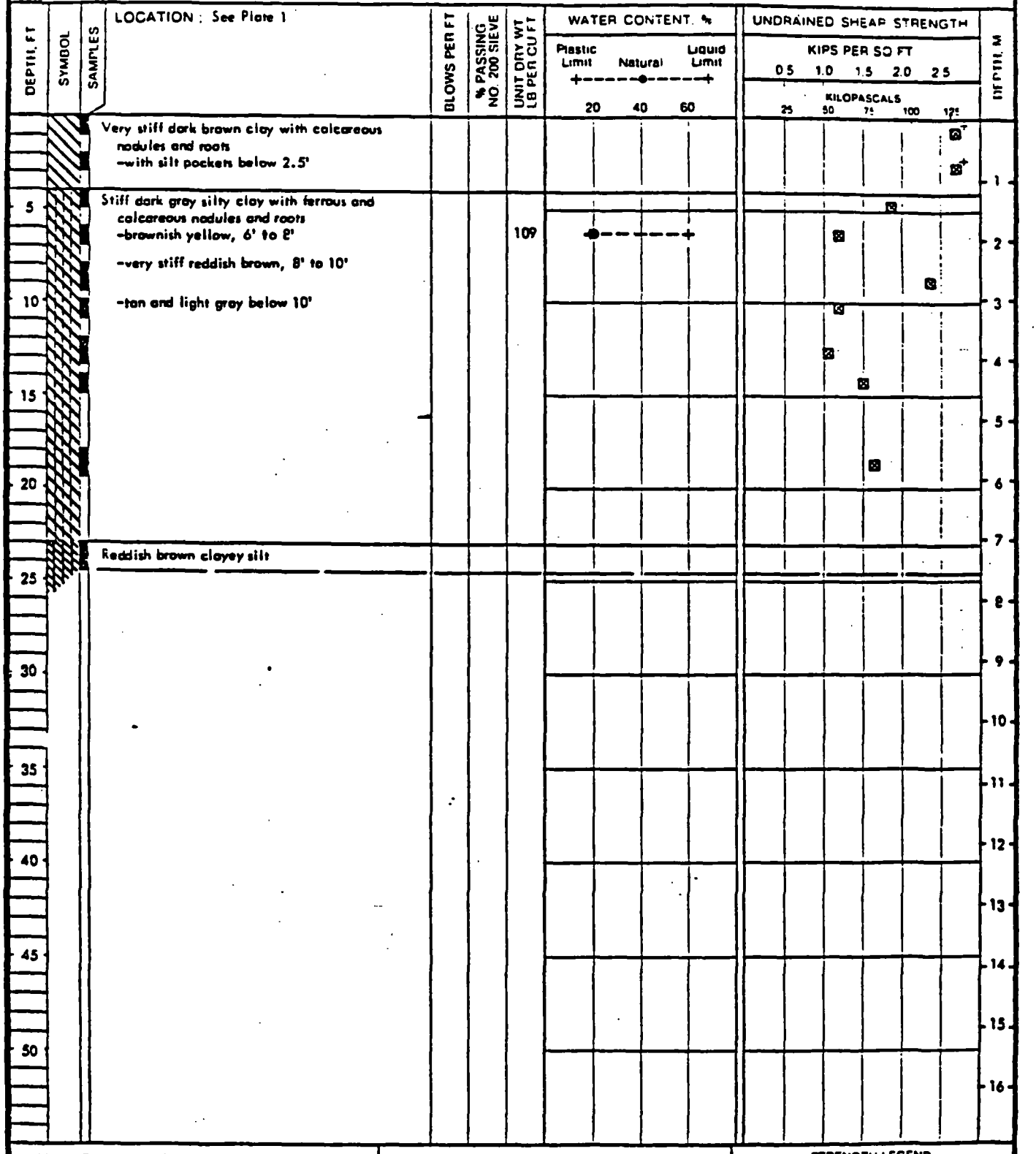
(open symbols above indicate remolded tests)

- ✣ Torvane
- ⊠ Hand Penetrometer

McCLELLAND ENGINEERS

PLATE 4

LOG OF BORING NO. 4
CLASS I DISPOSAL PONDS
WEBSTER GENERATING STATION
WEBSTER, TEXAS



JOB NO. : 0181-0318
COMPLETION DEPTH : 24.5'
DATE : October 13, 1981

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND
- ● Unconfined Compression
- ▲ Unconsolidated-Undrained Triaxial Compression
- ✚ Miniature Vane
- (open symbols above indicate remolded tests)
- ✥ Torvane
- ⊠ Hand Penetrometer

LOG OF BORING NO. 5

CLASS I DISPOSAL PONDS
WEBSTER GENERATING STATION
WEBSTER, TEXAS

LOCATION : See Plate 1

DEPTH, FT	SYMBOL	SAMPLES	BLOWS PER FT	% PASSING NO 200 SIEVE	UNIT DRY WT LB PER CU FT
0					
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

Very stiff tan and brown clay with calcareous nodules and roots
-dark brown with ferrous nodules, 2.5' to 4'
-brown, 4' to 6'
-firm to stiff below 5'
-tan, 6' to 10'
-slickensided, 10' to 13'
-with ferrous nodules below 13'

Reddish brown clayey silt with sand pockets

Stiff tan and reddish brown clay, slickensided with ferrous nodules

WATER CONTENT, %
Plastic Limit — Natural — Liquid Limit
20 40 60

UNDRAINED SHEAR STRENGTH
KIPS PER SQ FT
0.5 1.0 1.5 2.0 2.5
KILOPASCALS
25 50 75 100 125

DEPTH, M
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

JOB NO. : 0181-0318
COMPLETION DEPTH : 24.5'
DATE : October 13, 1961

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND
- ● Unconfined Compression
- ▲ Unconsolidated-Undrained Triaxial Compression
- ✦ Miniature Vane
- (open symbols above indicate remolded tests)
- ⊕ Torvane
- ⊠ Hand Penetrometer

McCLELLAND ENGINEERS

PLATE 6

LOG OF BORING NO. 6

CLASS I DISPOSAL PONDS
WEBSTER GENERATING STATION
WEBSTER, TEXAS

LOCATION . See Plate 1

Stiff dark brown clay with calcareous nodules and roots

-yellowish brown intermixed with gravel and shells, 3' to 4'

-tan and light gray

-slickensided with ferrous nodules below 8'

Reddish brown clayey silt

Stiff tan clay with calcareous and ferrous nodules

JOB NO. : 0181-0318

COMPLETION DEPTH : 25.0'

DATE : October 13, 1981

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND

- Unconfined Compression - ●
- Unconsolidated-Undrained Triaxial Compression ▲
- Miniature Vane ✦
- (open symbols above indicate remolded tests)
- Torvane ✦
- Hand Penetrometer ⊠

McCLELLAND

PLATE 7

ATTACHMENT K

Table of Well Construction Details

Well Number	MW-1	MW-2	MW-3	MW-4
Hole Diameter	7 in.	7 in.	7 in.	7 in.
Total Depth	21 ft.?	28 ft.?	29 ft.?	28 ft.?
Drill Method	Wet Rotary	Wet Rotary	Wet Rotary	Wet Rotary
Date Drilled	5-20-82	5-18-82	5-17-82	5-18-82
Casing I.D.	4 in.	4 in.	4 in.	4 in.
Casing Type	PVC	PVC	PVC	PVC
How Joined	N.P	N.P	N.P	N.P
Stick-up Length	N.P	N.P	N.P	N.P
T.O.C. (MSL)	19.48 ft.	21.11 ft.	21.94 ft.	21.43 ft.
Ground Level (MSL)	N.P	N.P	N.P	N.P
Capped/Lockable	Yes/No	Yes/No	Yes/No	Yes/No
Surface Pad Size	3 ft.	3 ft.	3 ft.	3 ft.
Depth Surface Seal	0- 4 ft. Cement	0-4 ft. Cement	0-4 ft. Cement	0-4 ft. Cement
Annulus Fill	Soil Cuttings	Soil Cuttings	Soil Cuttings	Soil Cuttings
Depth Annulus Seal	9 ft.	17 ft.	17 ft.	17 ft.
Depth Gravel Pack	10 ft.	18 ft.	18 ft.	18 ft.
Length Gravel Pack	11 ft.	10 ft.	11 ft.	10 ft.
Size of Gravel Pack	Clemtex No.2	Clemtex No.2	Clemtex No.2	Clemtex No.2
Depth Screen	15-20	22-27	23-28	22-27
Screen I.D./Slot	0.02 in.	0.02 in.	0.02 in.	0.02 in.
Screen Type	PVC	PVC	PVC	PVC
Screen Length	5 ft.	5 ft.	5 ft.	5 ft.
Blank Length	1 ft.	1 ft.	1 ft.	1 ft.
Development Method	Compressed Air	Compressed Air	Compressed Air	Compressed Air

N.P = Not Provided in Well Construction Details.

Note that depth of well and depth to screen are based on Table 7 in GWQA Report dated 5-29-84 which is in disagreement with Original construction data dated 7-22-82.

	Sample 1	Sample 2
Boring	1	4
Depth, Ft	3	7
Plastic Limit	18	19
Liquid Limit	55	66
Deionized Water		
Coefficient of Permeability (cm/sec)	6.3×10^{-9}	4.0×10^{-9}
pH	7.5	7.5
Demineralizer Regenerant		
Coefficient of Permeability (cm/sec)	1.2×10^{-9}	1.0×10^{-8}
pH	2.3	2.3
Inorganic Metal Cleanser		
Coefficient of Permeability (cm/sec)	2.9×10^{-9}	1.4×10^{-9}
pH	10.4	10.4

PERMEABILITY TEST RESULTS
Webster Generating Station

ATTACHMENT

TEXAS DEPARTMENT OF WATER RESOURCES

PERMIT APPLICATION
FOR
INDUSTRIAL SOLID WASTE STORAGE/PROCESSING/DISPOSAL FACILITY

PART A - FACILITY BACKGROUND INFORMATION

APPL. NO.	10502
COUNTY-DIST.	Harris 7
RECORD MANAGEMENT BY CARD DATA	
ADM. REVIEW BY	
ADMINISTRATIVELY COMPLETE	
COPIES SENT:	(CHECK)
	DIST 7

I. GENERAL INFORMATION

A. Applicant: Houston Lighting & Power, Webster Generating Station
(Individual, Corporation, or Other Legal Entity Name)

Address: P.O. Box 1700

City: Houston, State: Texas Zip Code: 77001

Telephone Number: (713) 481-7145

B. Authorized Agents

1. List those persons or firms authorized to act for the applicant during the processing of the permit application. Also indicate the capacity in which each person may represent the applicant (engineering, legal, etc.). The person listed first will be the primary recipient of correspondence regarding this application. Include the complete mailing addresses and phone numbers.

W. F. McGuire, Manager, Environmental Protection Department
Houston Lighting & Power Company
P.O. Box 1700, Houston, Texas 77001
(713) 481-7145
R. M. McCuistion, Vice-President, Power System Development
Houston Lighting & Power Company
P.O. Box 1700
Houston, Texas 77001
(713) 228-9211

2. List the individual and his/her mailing address that will be responsible for causing any necessary public notices to be published in the newspaper.

Name: W. F. McGuire

Address: P.O. Box 1700

City: Houston, State: Texas Zip Code: 77001

Telephone Number: (713) 481-7145

RECEIVED
AUG 18 1980
PERMIT CONTROL
TDWR

3. List the applicant's authorized agent for service.

Name: J. R. Johnston

Address: 611 Walker, P.O. Box 1700

City: Houston, State: Texas Zip Code: 77001

Telephone Number: (713) 228-9211

C. Operator: Identify the entity who will conduct facility operations. If same as applicant, state "same as applicant."

Name: Same as applicant.

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone Number: _____

D. Ownership

a. Private _____

(1) Corporation _____
(2) Partnership _____
(3) Proprietorship _____
(4) Non-profit organization _____

b. Public _____

(1) Federal _____
(2) Military _____
(3) State _____
(4) Regional _____
(5) County _____
(6) Municipal _____

c. Other (specify) _____

2. Is facility and site property owned by applicant?

X Yes ____ No

If you checked "no",

a. Submit as an attachment a copy of the lease for use of said facility and/or site property, as appropriate; and

b. Identify the facility owner. If same as applicant in Part A above, state "same as applicant." If different from the applicant, please note that the owner is required to sign the application on page 5.

Name: Same as applicant.

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone Number: _____

E. Type of Permit Application:

1. New X
2. Amendment _____ (TDWR Permit Number: _____)

F. Registration and Permit Information

1. Denote your TDWR Solid Waste Registration Number. If none, state "none."

31633

2. Indicate (by listing the permit number(s) in the appropriate column below) all existing or pending State and/or Federal permits or construction approvals which pertain to pollution control or industrial solid waste management activities conducted by your plant or at your location. Complete each blank by entering the permit number, or the date of application, or "none".

Relevant Program and/or Law	Permit No.	Government Agency*
a. Texas Solid Waste Disposal Act	8-15-80	TDWR
b. Wastewater disposal under the Texas Water Code	01044	TDWR
c. Underground injection under the Texas Water Code	None	
d. Texas Clean Air Act	None	
e. Texas Uranimum Surface Mining & Reclamation Act	None	
f. Texas Surface Coal Mining & Reclamation Act	None	
g. Hazardous Waste Management program under the Resource Conservation and Recovery Act	8-15-80	EPA

h.	UIC program under the Safe Drinking Water Act	None	
i.	NPDES program under the Clean Water Act	TX0006432	EPA
j.	PSD program under the Clean Air Act	None	
k.	Nonattainment program under the Clean Air Act	None	
l.	National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act	None	
m.	Ocean dumping permits under the Marine Protection Research and Sanctuaries Act	None	
n.	Dredge or fill permits under section 404 of the Clean Water Act	None	
o.	Other relevant environmental permits	None	

* Use the following acronyms for each agency as shown below:

TDWR = Texas Department of Water Resources
TACB = Texas Air Control Board
TRC = Texas Railroad Commission
TDH = Texas Department of Health
TDA = Texas Department of Agriculture
EPA = U. S. Environmental Protection Agency
CORPS = U. S. Army Corps of Engineers

G. Description of Business

1. Give a brief description of the nature of your business.

Electrical Power Generation

2. List the principal products and/or services which are provided by your plant. Please itemize by Standard Industrial Classification (SIC) codes.

4911 Electrical Power Services

I, R. M. McCuistion (Name), Vice-President (Title)

I, _____ (Name), _____ (Title)

Certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete.

Signature: R M McCuistion, Date: 8-15-80

Signature: _____, Date: _____

SUBSCRIBED AND SWORN to before me by the said R. M. McCuistion _____ on this 15th day of August, 19 80.

My commission expires on the 7th day of March, 19 84.

Debra R. Blackburn
Notary Public in and for

Harris County, Texas

FEE PAID

II. SITE BACKGROUND INFORMATION

A. Location of Site

1. Facility Name: Webster Generating Station

Street Address, if available: 19301 State Hwy 3

Webster, Texas County: Harris

2. Are your waste management operations within the extraterritorial jurisdiction of a municipality?

X Yes ____ No

If you checked "yes," what municipality? City of Webster

3. Give a verbal description of the location of the facility site with respect to known or easily identifiable landmarks.

Located approximately 25 miles southeast of Houston, immediately outside the town of Webster, along US Highway 3.

4. Detail the access routes from the nearest U.S. or State Highway to the facility site.

S.H.3 South of Webster, Texas.

5. Submit as "Attachment A" a United States Geological Survey (USGS), 7½ minute quadrangle map. Indicate on this map the location of the site and the land use patterns of the areas within 1 mile (1.6 km) of the site boundaries (e.g., residential, commercial, recreational, agricultural, undeveloped, etc.). Each area of land use should be labeled on the map. (Note: if such a map is not available, submit a substitute map such as a State Department of Highways and Public Transportation county map with sufficient scale to adequately show the site location and surrounding land use patterns.

6. a. Submit as "Attachment B" a map indicating the boundaries of all adjacent parcels of land, and a list of the names and mailing addresses of all adjacent landowners and other nearby landowners who might consider themselves affected by the activities described by this application. Cross-reference this list to the map through the use of appropriate keying techniques. The map should be a USGS map, a city or county plat, or another map or drawing with a scale adequate enough to show the cross-referenced affected landowners.

b. Indicate from what source(s) the names and addresses of persons identified as affected were obtained.

City	
County	X
School District	
Water District	
Abstract Co.	
Other (specify)	

7. Enter the geographical coordinates of the site:

Latitude: N29 deg 31 min 47 sec

Longtitude: W95 deg 06 min 10 sec

8. Is the facility located on Indian lands? Check one:

____ Yes X No

B. Legal Description of Site

Submit as "Attachment C" a legal description of the entire tract of land upon which the waste management operations referred to in this permit application occur or will occur.

C. Site Environmental and Technical Information

1. Climatic and Hydrologic

a. Is any portion of your waste management facility site (including proposed, active, and inactive portions) subject to flooding from adjacent or nearby surface water bodies under the following conditions?

24-hr Rainfall Event	Yes	No
5-year		X
50-year		X
100-year	X	

b. Are there any producing groundwater wells on your site property?

X Yes ____ No

If you checked "yes,"

(1) Indicate the number of such wells: two (2) , and

(2) Indicate the corresponding water uses below:

(a) Industrial uses:
Cooling water ____
Process water X
Fire-control water ____

(b) Potable (drinking) water ____

(c) Agricultural uses:
Irrigation water for livestock food crops or grazing land ____
Livestock watering ____
Irrigation water for human food crops ____

c. Are any adjacent or nearby surface waters utilized by the applicant?

X Yes ____ No

If you checked "yes," indicate the corresponding water uses below:

(1) Industrial uses:
Cooling water X
Process water ____
Fire-control water X

(2) Potable (drinking) water ____

(3) Agricultural uses:
Irrigation water for livestock food crops or grazing land ____
Livestock watering ____
Irrigation water for human food crops ____

2. Site Land Use and Subsidence Information

a. Is any portion of the overall site property utilized for agricultural purposes?

____ Yes X No

If you checked "yes," indicate the corresponding uses below:

(1) Grazing ____
(2) Livestock food crop ____
(3) Human food crop ____
If you checked no. (2) or (3), specify the types of crops grown. ____

b. Is any portion of the overall site property subject to land subsidence?

X Yes ____ No

If you checked "yes," estimate the magnitude of the greatest subsidence that has occurred (in units of feet). 0.8 ft. (1973-1978)

III. WASTES AND WASTE MANAGEMENT

A. Waste Generation and Management Activities

Is any hazardous industrial solid waste (see Title 40, Code of Federal Regulations, Part 261) presently or proposed to be generated at your facility?

X Yes ___No

If you checked "no," go to Section III.B.2. below.
If you checked "yes," answer the following question.

1. Are you presently registered with TDWR as a solid waste generator?

X Yes ___No

If you checked "no," contact the Solid Waste Section of TDWR in Austin, Texas to obtain registration information. Also, continue with the application form (go to Number 2 below).

If you checked "yes," go to Section I of your Notice of Registration, determine which of your wastes are hazardous, and list these wastes (and mixtures) in Table III-1 (see Number 2 below).

2. Complete Table III-1 below, listing all hazardous wastes and all mixtures containing any hazardous waste which are presently or proposed to be generated at your facility. (see 40 CFR 261.31-33), attaching additional copies as necessary.

In this table, "TDWR Sequence Number" refers to the number in the left-hand column in Section I of your Notice of Registration (Note: if you are not registered with TDWR, enter "NA" for TDWR Sequence Number and TDWR Waste Code Number).

For the EPA Hazard Code and EPA Hazardous Waste Numbers, see 40 CFR 261.30-33. For annual quantity, provide the amount in units of pounds (as generated) for each waste and/or waste mixture.

Please group the listings of wastes by SIC code, insofar as your processes are designated by SIC codings. Also, within the general SIC code groups, give a brief description of the specific process or operation from which the waste has been generated.

B. Waste Management Facilities Summary

1. For each waste and waste mixture listed in Table III-1 that is presently or proposed to be managed on-site, provide the summary sheet shown in Table III-2 (Note: you must make copies of Table III-2 and submit the completed set of tables as "Attachment D").

Webster Generating Station

Table III Generated Hazardous Wastes and Management Activities

Verbal Description of Waste	IDWH Sequence Number	IDWH Waste Code Number	EPA Hazard Code	EPA Hazardous Waste No.	Waste Management Activities (Check applicable items) Off Site Disposal	On Site Storage[1]	On Site Processing[2]	On Site Disposal	Annual Quantity Generated (lbs)	SIC Code and Process
Demineralizer Regenerant	NA	NA	C	D002		X	X		81,532,000*	
Demineralizer Regenerant Inorganic Sludge	2	140540	E		X	X			**	
Metal Cleaning Organic Acids	NA	NA	E,C	D007,D002		X	X		18,287,000*	
Metal Cleaning & Other Inorganic Sludge	2	140540	E		X	X			**	
Metal Cleaning Organic Acids	NA	NA	E		X	X	X		2,752,500*	
Metal Cleaning Organic Sludge	NA	148990	E		X	X			**	
Chemical Waste Treatment System Sludge	NA	NA	E	D007	X	X	X		243,000	
Waste Oil & Sludge	V	110450	T,O		X	X	X		12,000	
Degreasing and Paint Solvents	NA	NA	I,T	F003 F005	X	X			9,700	
Asbestos in insulation	NA	170750	T	D013	X	X	X		3,600***	

*Untreated amounts, normally treated and discharged under wastewater permits

**Unknown small amount

*** Actual percent asbestos content is variable but small

[1] "Storage" means the interim containment or control of waste after generation and prior to ultimate disposal.

[2] "Processing" means the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of hazardous waste so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced volume. The "transfer" of solid waste for reuse or disposal as used above, does not include the actions of a carrier in conveying or transporting solid waste by truck, ship, pipeline, or other means.

2. Has the applicant at any time conducted the on-site storage, processing, or disposal of industrial solid waste now identified or listed as hazardous waste?

   X Yes _____ No

   If you checked "yes," complete Table III-3 indicating the hazardous industrial solid waste management facility components which were once utilized at your plant site but are no longer in service (i.e., inactive facility components).

   If you checked "no," and if no hazardous industrial solid waste is presently or proposed to be generated or managed at your facility, then you need not file this permit application. Otherwise, proceed with application form.

3. For each facility component indicated in Table III-2 (Attachment D) and Table III-3, complete the following Table III-4 attaching additional copies as necessary. Enter the name of each facility component as specified in the earlier tables.

   Give the design capacity of each facility component in any of the units shown. In the case of inactive facilities for which design details are unavailable, an estimate of the design capacity is sufficient.

   Please note that each facility component should be described in your own words on the line provided for "verbal description."

4. Provide an estimate of the total weight (lbs) of hazardous industrial solid waste material that has been disposed of and/or stored within your site boundaries and not removed to another site.

C. Location of Waste Management Facilities and Components

1. Submit as "Attachment E" a drawn-to-scale topographic map (or other map if a topographic map is unavailable) extending one mile (and only one mile) beyond the property boundaries of the overall plant site, depicting the following:

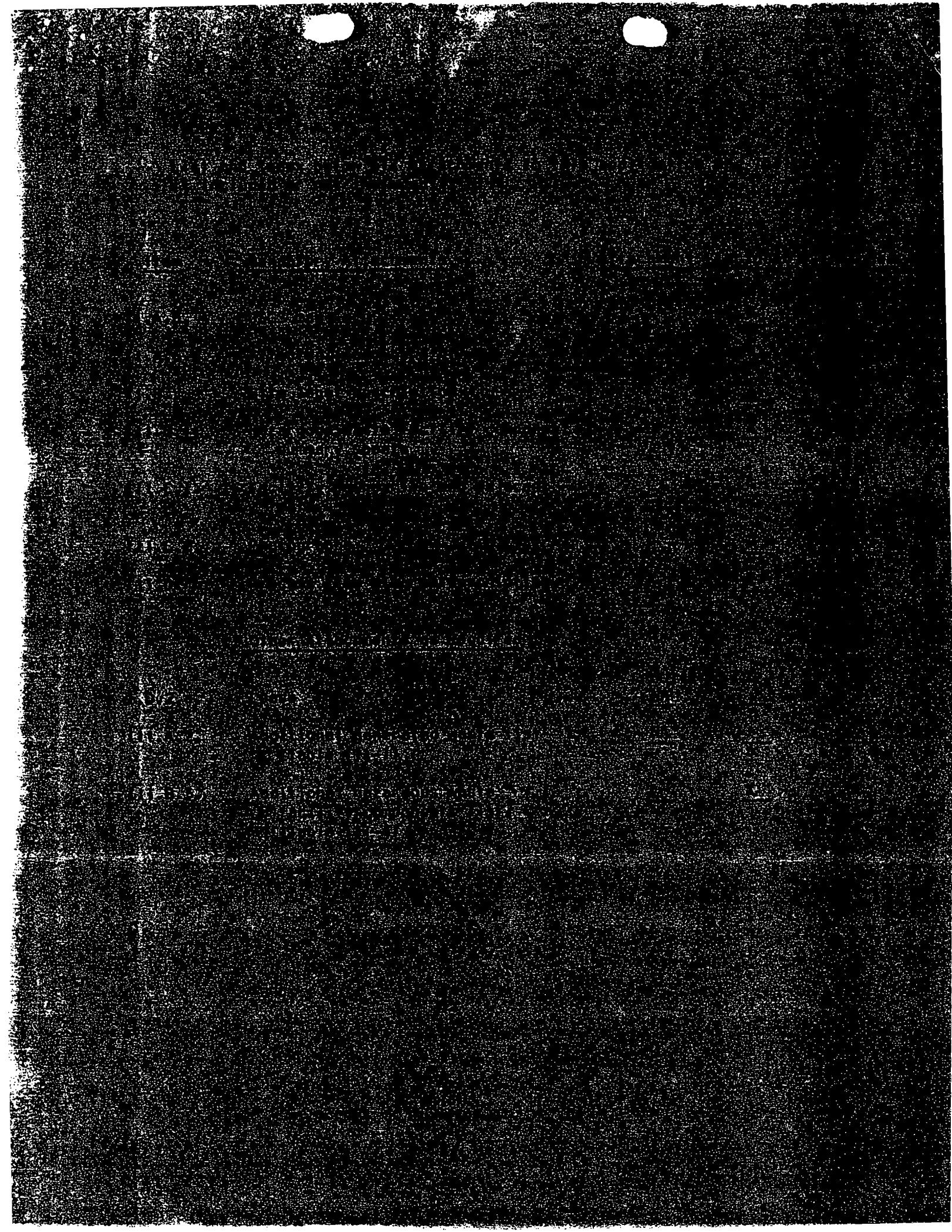
   a. The approximate boundaries of the site (described in Section II B) and within these boundaries, the location and boundaries of the areas occupied by each active, inactive, and proposed facility component (see Tables III-2 and III-3 for facility components). Each depicted area should be labeled to identify the facility component(s), component status (i.e., active, inactive, or proposed), and area size in acres.

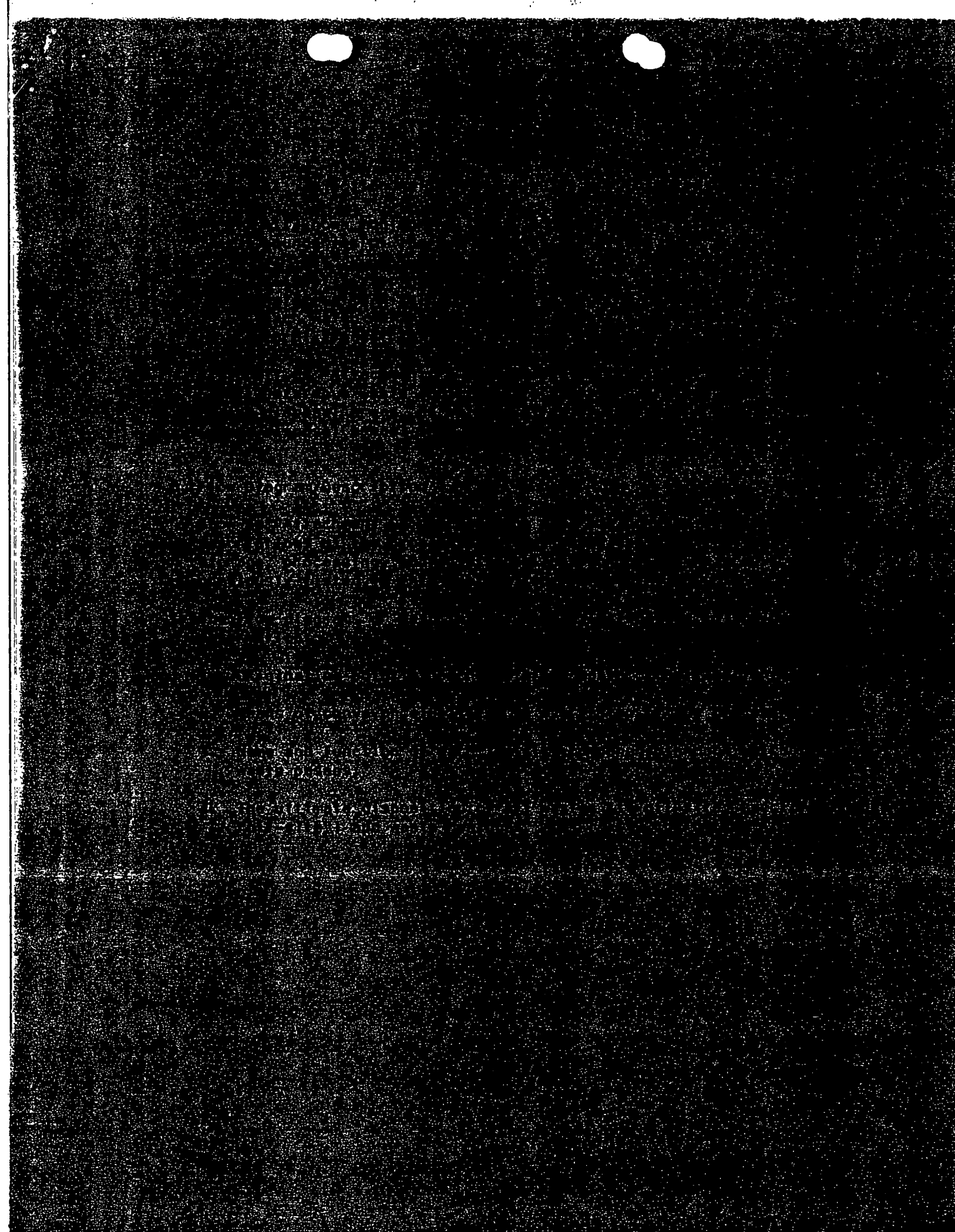
Table III-4 Hazardous Waste Facility Components List

Facility Component Name	TDWR Seq. No.	Status Inactive	Active	Proposed	Design Capacity (cu yds)	(gal)	(lbs)	Number of Years Utilized	Date in Service
Lagoon/ Pond (lined)			X			372,000		10	1970
Verbal Description: Clay lined pond for the collection & equalization of demineralizer regeneration wastes prior to treatment. Sludge accumulated at pond bottom periodically removed for off-site disposal.									
*Tank (Surface Processing)			X			8,600		3	1977
Verbal Description: Treatment system (Surface processing) for neutralization consists of one (1) mixing chamber (300 gallon) one (1)flocculation chamber (1100 gallon), one(1) settling chamber (6900 gallon) and one(1)pH readjustment chamber (300 gallon)									
Lagoon/Pond (lined)			X			270,000		3	1977
Verbal Description: Clay lined pond for the collection of metal cleaning inorganic acid wastes from boiler & equipment cleaning operations prior to treatment. Sludge accumulated at pond bottom periodically removed for off-site disposal.									
Lagoon/Pond (lined)			X			270,000		-10	1970
Verbal Description: Clay lined pond for the collection of metal cleaning organic acids from boiler cleaning operations prior to off-site treatment. Sludge accumulated at pond bottom periodically removed for off-site disposal.									
Basin (earthen, below-grade lined)			X			1790 (ea)		3	1977
Verbal Description: Two clay lined sand drying beds for the collection & processing of sludge from the chemical waste treatment system and oily waste treatment system. Dried sludge is periodically removed for off-site disposal.									
Tank (surface storage)			X			3,000		3	1977
Verbal Description: Chamber used for the collection of waste oil & sludge which is accumulated from the oily waste treatment system. This waste is periodically trucked off-site for disposal or is transferred to the sludge drying beds.									

*Chemical Waste Treatment System

Facility Component Name	HWR Seq. No.	Status: Inactive	Active	Proposed	Design Capacity (cu yds)	(gal)	(lbs)	Number of Years Utilized	Date in Service
Other			X		NA	NA	NA	NA	NA
Verbal Description: Asbestos used for insulation will be placed in bags and wet down prior to off-site disposal. Actual percent asbestos content is variable but small.									
Drum Storage Area (other)			X		NA	NA	NA	NA	NA
Verbal Description: Drum storage area for the collection of waste solvents used in degreasing and painting operations prior to off-site disposal.									
Verbal Description:									
Verbal Description:									
Verbal Description:									
Verbal Description:									





Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

8

GENERAL

EPA — GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

T X D 0 0 0 8 3 7 3 6 9

LABEL ITEMS

II. FACILITY NAME

FACILITY MAILING ADDRESS

FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

III. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of terms.

SPECIFIC QUESTIONS	MARK "X" YES	NO	ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
B. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		
C. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X
D. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
E. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
F. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
G. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
H. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
I. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

IV. NAME OF FACILITY

1 | SKIP | W E B S T E R G E N E R A T I N G S T A T I O N

V. FACILITY CONTACT

A. NAME & TITLE (last, first, & title) | B. PHONE (area code & no.)

2 | M c G U I R E , W . F . M A N A G E R E N V I R O N | 7 1 3 | 4 8 1 | 7 1 4 5

VI. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 | P O B O X 1 7 0 0

B. CITY OR TOWN | C. STATE | D. ZIP CODE

4 | H O U S T O N | T X | 7 7 0 0 1

VII. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 | 1 9 3 0 1 O L D G A V E S T O N R O A D

B. COUNTY NAME

H A R R I S

B. CITY OR TOWN | C. STATE | D. ZIP CODE

6 | W E B S T E R | T X | 7 7 5 9 8

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

4911 (specify) STEAM ELECTRIC POWER

(specify)

(specify)

(specify)

HOUSTON LIGHTING & POWER COMPANY

P (specify) 713 481 7145

PO BOX 1700

HOUSTON TX 77001

TX0006432

01044

(specify) TEXAS DEPT. OF WATER RESOURCES

(specify)

STEAM ELECTRIC POWER PRODUCTION

A. NAME & OFFICIAL TITLE (type or print)
R. M. McCUISTION
VICE PRESIDENT

B. SIGNATURE R M McCuistion

C. DATE SIGNED 11-18-80

EPA Form 3510-1 (6-80) REVERSE

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U. S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: T X D 0 0 0 8 3 7 3 6 9

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

[X] 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

C	YR.	MO.	DAY
8	5 4	0 6	1 5

[ ] 2. NEW FACILITY (Complete item below.)

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY

B. REVISED APPLICATION (place an "X" below and complete Item I above)

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY — For each code entered in column A, enter the capacity of the process.

1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the process in the space provided, Item III-C.)	T04	GALLONS PER HOUR OR LITERS PER HOUR

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	H
LITERS PER HOUR	I
ACRE-FEET	A
HECTARE-METER	B
ACRES	K
HECTARES	S

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY (1) AMOUNT (specify)	(2) UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G	
X-2	T 0 3	220	U	
1	S 0 4	372,000 SI	G	
2	T 0 1	1,200 tank	E	
3	S 0 4	270.000 SI	G	
4	S 0 4	270,000 SI	G	

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY (1) AMOUNT (specify)	(2) UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
5	S 0 2	3,500 Tank Storage	G	
6	T 0 2	24,000 treatment SI	U	
7	T 0 1	360,000 treatment tank	U	
8	S 0 1	1,616 Storage container	G	
9	S 0 1	1,090 Storage container	H	
10				

C DUP 1

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the quantity must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES — For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item D(2) to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A select the code(s) from the list of process codes contained in Item D(2) to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous waste that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the remaining right box of Item D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION — If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on the line enter "included with above" and make no other entries on that line.

3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 300 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

W	T	X	D	0	0	0	8	3	7	3	6	9	

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

No.	A. EPA HAZARDOUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES (1)	(2)	(3)	(4)	(5)	(6)
1	D002	81,532,000	P	S04	T01				
2	D000	Unknown, small amount		S04					
3	D002	18,287,000	P	S04	T01				
4	D000	Unknown, small amount		S04					
5	D000	2,752,500	P	S04	T04				
6	D007	243,000	P	S02	T02				
7	D000	Unknown, small amount		S04					
8	D000	12,000	P	T01	S02				Listed to be compatible with State requirements
9	F003	9,700	P	S01					
10	F005	Included with above							
11	U013	3,600	P	S01					Listed to be compatible with State requirements
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									

IV. DESCRIPTION OF HAZARDOUS WAS (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

F. EPA I.D. NO. (enter from page 1): T X D 0 0 0 8 3 7 3 6 9

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas, and sites of future storage, treatment or disposal areas (see instructions for more detail).

VII. FACILITY GEOGRAPHIC LOCATION

A. LATITUDE (degrees, minutes, & seconds)			B. LONGITUDE (degrees, minutes, & seconds)		
29	31	47	95	06	10

VIII. FACILITY OWNER

X A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

E. 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. (area code & no.)

F. 3. STREET OR P.O. BOX | G. 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE

IX. OWNER CERTIFICATION

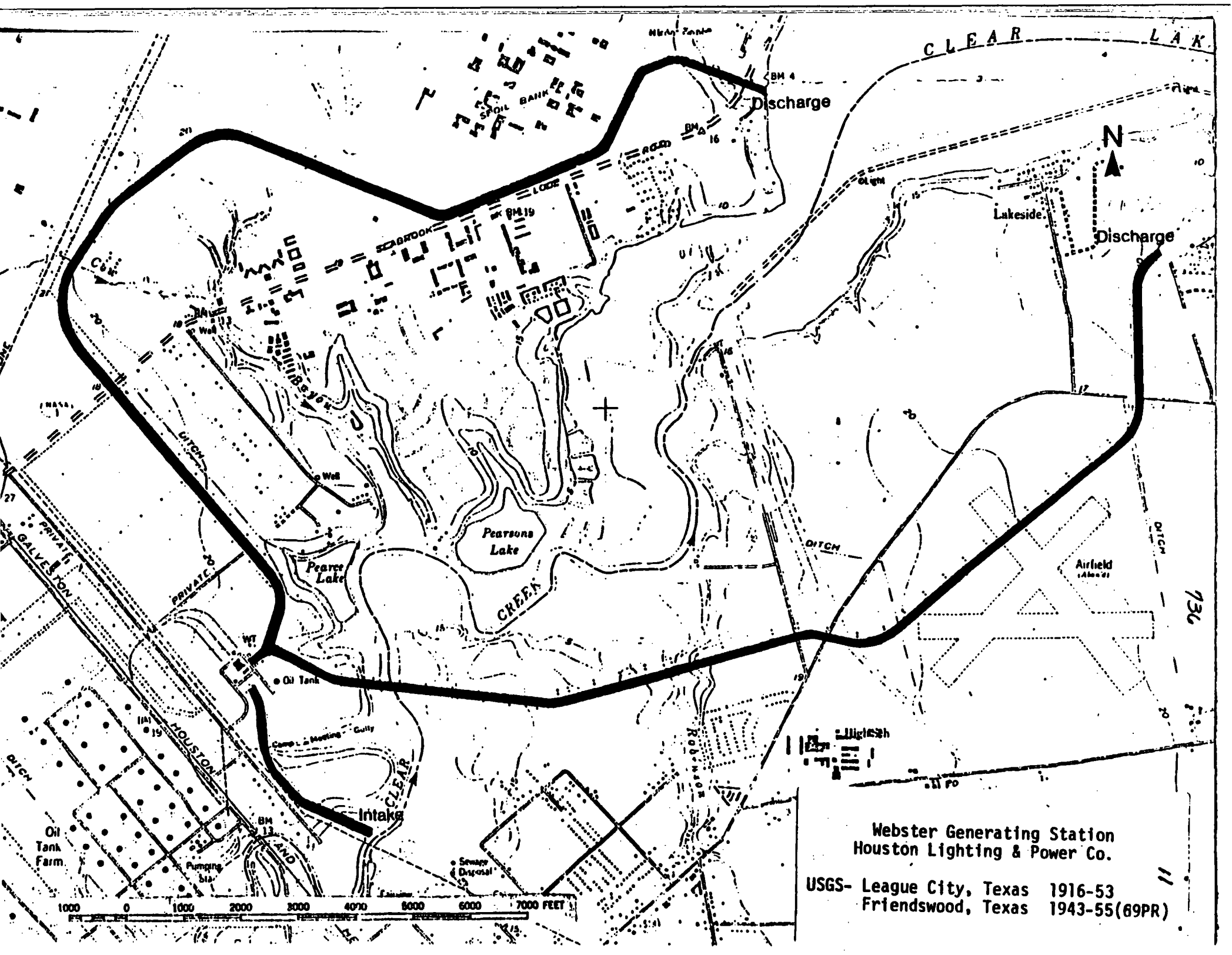
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
R. M. McCUISTION VICE PRESIDENT	R M McCuistion	11-18-80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED

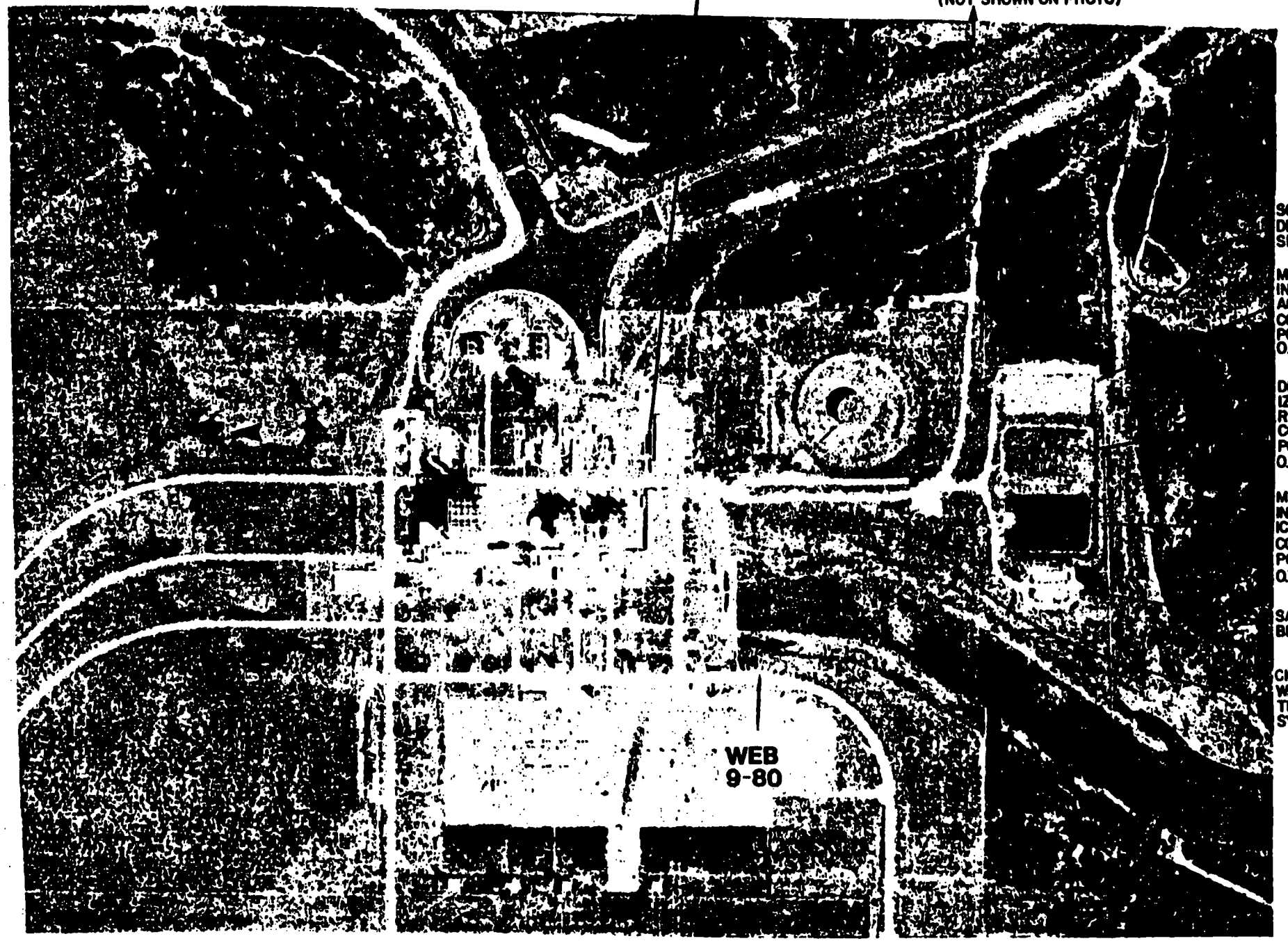

CLEAR LAK
Discharge
Discharge
Lakeside
N
SCARBROOK
Well
Well
DITCH
PRIVATE
GALVESTON
Pearce Lake
Pearsons Lake
CREEK
DITCH
DITCH
Airfield
WT
Oil Tank
Camp Meeting Gully
HOUSTON
CLEAR
Intake
Oil Tank Farm
Pumping Sta.
Sewage Disposal
ROBINSON
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
Webster Generating Station
Houston Lighting & Power Co.
USGS- League City, Texas 1916-53
Friendswood, Texas 1943-55(69PR)

Continued from page 4.

V. FACILITY DRAWING (see page 4)

WASTE OIL & SLUDGE COLLECTION FACILITY

SOLID WASTE DISPOSAL SITE (NOT SHOWN ON PHOTO)



SOLID WASTE DISPOSAL SITE

METAL CLEANING ORGANIC ACIDS COLLECTION POND 0.46 ACRE

DEMINERALIZER REGENERANT COLLECTION POND 0.65 ACRE

METAL CLEANING INORGANIC ACIDS COLLECTION POND 0.71 ACRE

SAND DRYING BEDS

CHEMICAL WASTE TREATMENT SYSTEM

WEBSTER GENERATING STATION (607.762 ACRES)

1"=300'

Refer to [illegible] map for property boundaries

Form Approved OMB No. 158-S80004

12

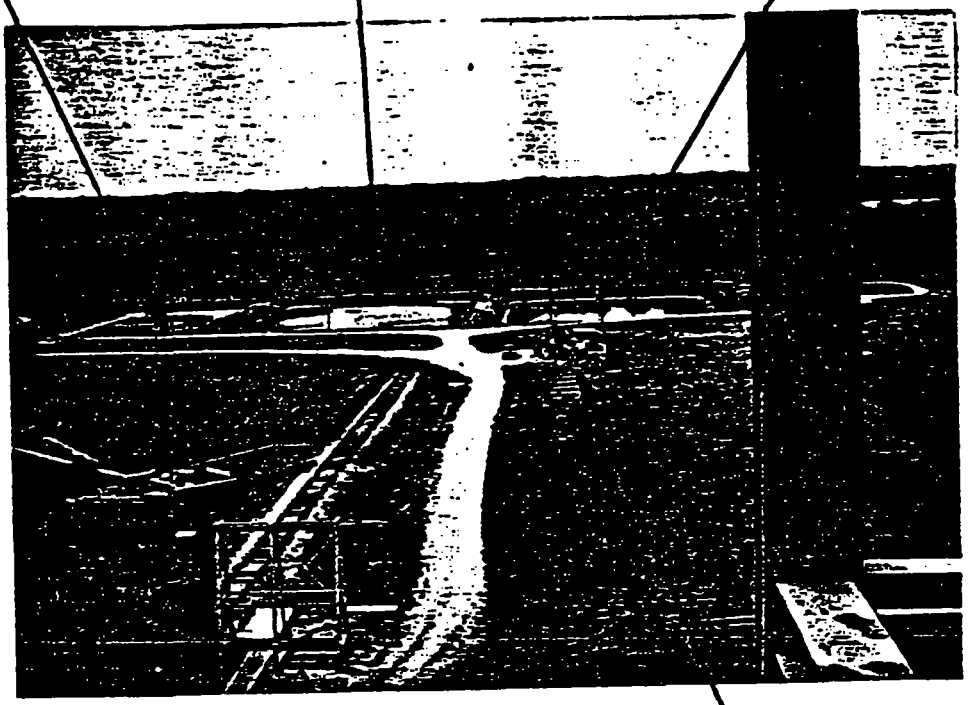
7364

WEBSTER GENERATING STATION

METAL CLEANING
ORGANIC ACIDS
COLLECTION POND

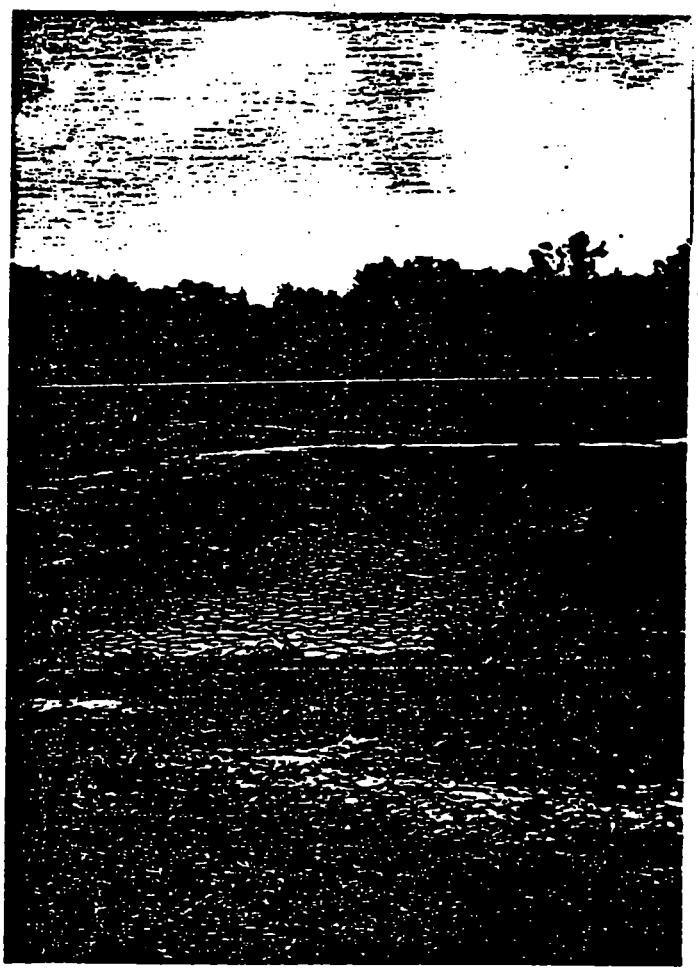
DEMINERALIZER REGENERANT
COLLECTION POND

METAL CLEANING
INORGANIC ACIDS
COLLECTION POND



CHEMICAL WASTE
TREATMENT SYSTEM

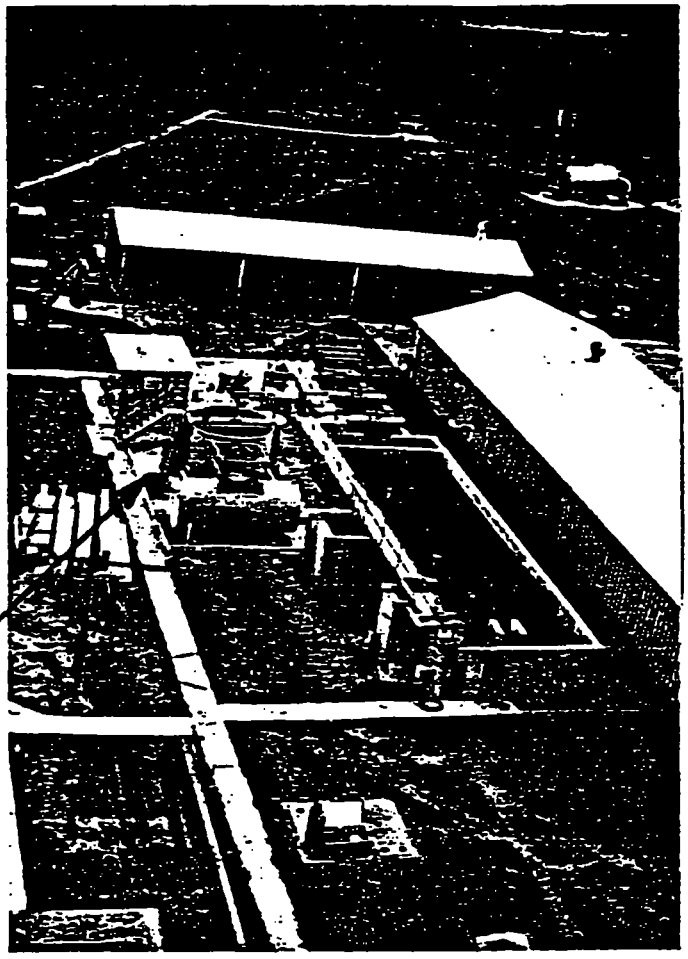
WEBSTER GENERATING STATION



SAND DRYING BEDS

September 8, 1980

WEBSTER GENERATING STATION



WASTE OIL & SLUDGE
COLLECTION FACILITY

Reference 14

STANDA[RD &] POOR'S

REGISTER of CORPORATIONS, DIRECTORS AND EXECUTIVES

Volume 1

1989

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STANDARD & POOR'S CORPORATION
A McGraw-Hill Financial Services Company
25 Broadway, New York, N.Y. 10004
Telephone—212-208-8702

Accts— Deloitte Haskins & Sells, Houston, Texas
Primary Bank— Texas Commerce Bank-Houston, N.A.
Primary Law Firm— Bracewell & Patterson
Employees: 1,900
*Also DIRECTORS —Other Directors Are:
Frank A. Bennack, Jr. Robert J. Danzig
Peter J. DeMaria Gilbert C. Maurer
BUSINESS: Publishing newspapers
S.I.C. 2711

HOUSTON DIE CASTING CO.
(Subs. Chemillte Corp.)
3315 W. 11th Street, Houston, Texas 77008
Tel. 713-869-1434

*Pres—Harold L. Gluckman
Exec V-P (Product & Sales)—Joe Richard
*Secy & Compt—Peggy Papageorgiou
Purch Agt—Keith Humber
Accts— P. Levin & Co., Houston, Texas
Primary Bank— Ameriway Bank/Woodway, N.A.
Primary Law Firm—Weycer, Kaplan, Pulaski & Zuber
Sales: $3Mil Employees: 45
*Also DIRECTORS
PRODUCTS: Die castings & machining
S.I.C. 3599; 3363; 3364; 3541

HOUSTON ELECTRIC CO.
201 Redmond, Warner Robins, Ga. 31093
Tel. 912-922-8813

Pres—Charles G. McDonald
Gen Coun—R. Jonesi Lee
Project Mgr—William H. Bernard
Accts— Walker, Meadors & Childs, Warner Robins, Ga.
Primary Bank— First National Bank of Atlanta
Sales: $1.30Mil Employees: 23
BUSINESS: Electrical
S.I.C. 5063; 5065

HOUSTON ELECTRONICS CORP.
(Div. Dak Industries Inc.)
501 Pine St. Ext., Kane, Pa. 16735
Tel. 814-837-9550

Pres—John M. Launtz
V-P—Jack E. Launtz
Purch Agt—R. Iwanaky
Sales Range: $2—5Mil Employees: 150
PRODUCTS: Quartz crystal bases, glass to metal seals
S.I.C. 3679

HOUSTON ENGINEERS, INC.
(Subs. Wilson Industries, Inc.)
P. O. Box 567, Houston, Texas 77001
Tel. 713-227-3050

*Pres—Dwight E. Beach, Jr.
V-P (Engr)—Derrel D. Webb
V-P—O. Hunter
V-P—Roberts
V-P—J. P. Doyle
Secy—Hardeman-Kahn
Cont—Colin Kinder
Accts— Arthur Andersen & Co., Houston, Texas
Primary Bank— Texas Commerce Bank-Houston, N.A.
Sales: $12Mil Employees: 140
*Also DIRECTORS —Other Directors Are:
Edwin A. Anderson James K. Andrews
W. J. Miller Preston Moore
Wallace S. Wilson
PRODUCTS: Oil well tools
S.I.C. 3533

H.W. HOUSTON CONSTRUCTION CO.
210 S. Victoria, Pueblo, Colo. 81003
Tel. 719-544-2791

Pres & Treas—Albert Concialdi
V-P & Secy—Kenneth W. West
V-P—Robert Concialdi
Gen Coun—Mickey W. Smith
Accts— C.L. Brown & Associates, Pueblo, Colo.
Primary Bank— Minnequa Bank of Pueblo
Primary Law Firm—Smith & Billups
Sales: $15Mil Employees: 100
BUSINESS: General contractor
S.I.C. 1542

HOUSTON INDUSTRIES INCORPORATED
P.O. Box 4567, Houston, Texas 77210
Tel. 713-629-3000

Houston Industries Incorporated

*Pres & Chief Exec Officer—D. D. Jordan
*Exec V-P & Chief Fin Officer—H. R. Dean
V-P & Treas—W. A. Cropper
V-P (Cor Devel)—R. B. Dyer
V-P, Gen Coun & Secy—H. R. Kelly
V-P & Compt—D. M. McClanahan
*V-P—D. D. Sykora
Accts— Deloitte Haskins & Sells, Houston, Texas
Primary Bank— Chemical Bank, N.A.
Primary Law Firm—Baker & Botts
Revenue: $3.63Bil Employees: 11,506
Stock Exchange(s): NYS/BST, PAC, MID, CIN, PSE
*Also DIRECTORS —Other Directors Are:
Charles E. Bishop John T. Cater
Floyd L. Culler, Jr. Joseph M. Hendrie
Howard W. Horne James R. Leach
Jon S. Lindsay Thomas B. McDade
Randall Meyer Kenneth L. Schnitzer, Sr.
Jack T. Trotter
BUSINESS: Holding co.; generation, transmission, distr. & sale of electric energy, oil & gas; coal supply serv., cable TV; development & marketing of lighting, purchase of accounts receivable of subsidiary & venture capital
S.I.C. 6719; 1221; 1311; 4911; 5063; 6799

HOUSTON INSTRUMENT
(Div. Ametek Inc.)
8500 Cameron Rd., Austin, Texas 78753
Tel. 512-835-0900

Pres—Doyle K. Cavin
V-P (Mktg)—John J. Carr, Jr.
V-P (Mfg)—Vern Glover
V-P (Engr)—Eric Silverberg
V-P (Admin)—Robert Zurack
Compt—Ted Middelberg
Accts— Arthur Young, Philadelphia, Pa.
Primary Bank— Chase Manhattan Bank, N.A.
Primary Law Firm—Strooock & Strooock & Lavan
Employees: 400
PRODUCTS: Computer graphic peripheral devices; plotters, digitizers, scanners
S.I.C. 3577; 3575; 3577

HOUSTON LIGHTING & POWER COMPANY
(Subs. Houston Industries Incorporated)
P.O. Box 1700, Houston, Texas 77251
Tel. 713-228-9211

SERVICE FIRST The Light company
Houston Lighting & Power

*Chrm & Chief Exec Officer—D. D. Jordon
*Pres & Chief Oper Officer—D. D. Sykora
Group V-P (Nuclear)—J. H. Goldberg
Group V-P (External Affairs)—R. J. Snokhous
Group V-P (Power Oper)—D. E. Simmons
Group V-P (Admin & Support)—E. A. Turner
Sr V-P, Gen Coun & Secy—H. R. Kelly
V-P (Energy Prod)—D. G. Tees
V-P (Human & Inf Resources)—R. E. Doan
V-P (Sys Oper)—J. D. Greenwade
V-P (Fossil Plt Engr & Constr)—L. B. Horrigan, Jr.
V-P (Regulatory Rel)—R. S. Letbetter
V-P (Cust Rel)—A. D. Maddox
V-P & Compt—J. S. Brian
V-P (Fossil Fuel Resources)—L. G. Brackeen
V-P (Nuclear Oper)—Gerald E. Vaughn
Treas—K. W. Nabors
Purch Agt—B. Commander, Jr.
Accts— Deloitte Haskins & Sells, Houston, Texas
Primary Bank— Texas Commerce Bank, N. A.
Primary Law Firm—Baker & Botts
Revenue: $3Bil Employees: 10,400
*Also DIRECTORS —Other Directors Are:
Charles E. Bishop John T. Cater
Hollis R. Dean Joseph M. Hendrie
Howard W. Horne James R. Leach
Thomas B. McDade Kenneth L. Schnitzer, Sr.
Jack T. Trotter
PRODUCTS: Generation, transmission, distr. & sale of electric energy
S.I.C. 4911

HOUSTON METALS CORP.
910-800 Pender St., Vancouver, B.C., Can. V6Q 2V6
Tel. 604-688-4245

*Pres & Secy—Adolf A. Petancic
Accts— Elliott Tulk Pryce & Anderson, Vancouver, B.C., Can.
Primary Law Firm—Hemsworth & Schmidt
Assets: $1.96Mil
Stock Exchange(s): VAN
*Also DIRECTORS —Other Directors Are:
H. Farris John Petancic
George Stewart
PRODUCTS: Oil & gas explor
S.I.C. 1311

HOUSTON OIL & ENERGY INC.
422 Petroleum Bldg., Abilene, Texas 79603

Pres—C. Houston
BUSINESS: Oil & gas explor
S.I.C. 1311

HOUSTON OIL & MINERALS CORPORATION
(Subs. Seagull Energy Corp.)
1100 Louisiana St., Houston, Texas 77002
Tel. 713-757-2131

*Chrm & Pres—Philip Oxley
*Exec V-P—Stephen D. Chesebro
*Sr V-P—G. W. Frank
*V-P—G. E. Burgher, Jr.
V-P—John L. Elliott
V-P & Asst Secy—C. B. Masters
*V-P—E. J. Milan
V-P—Vernon M. Turner
Treas—Gerald L. Georgen
Secy—Karl A. Stew
Cont—T. S. Corbett

SUBSIDIARIES
HOUSTON OIL INTERN
(SUBS.
Chrm & Pres—Philip Oxley
HOUSTON OIL & MINE
COMPANY (SU
Chrm & Pres—S. D. Chesebro
HOUSTON OIL & MINERA
COMPAN
Chrm—Joe B. Foster
Pres & Chief Exec Offic
HOUSTON OIL & MINE
DEVELOPMENT
Chrm & Pres—S. D. Ches
HOUSTON PRODUCTIO
Chrm & Pres—S. D. Ches
HOUSTON RIG &
Chrm & Pres—S. D. Ches
Accts— Arthur
Primary Bank—
Trust Co. of Chicago
Total Income: $184.71M
*Also DIRE
J. D. Gooch
BUSINESS: Oil
S.I.C. 1311; 1321
HOUSTON OIL
1301 Fannin
V-P & Treas
Accts— Peat Marwick Main
Primary Bank— First City
Primary Law Firm
Sales: $6.66Mil
Stock Exchange(s):
BUSINESS: Oil &
S.I.C. 1311; 1321
HOUSTON P
1100 Louisiana
Sr V-P (Adm)—George
Accts— Peat Marwick Main
Primary Bank— NCNB
Sales: $31.56Mil
Stock Exchange(s):
BUSINESS: Oil &
S.I.C. 6795
HOUSTON P
1200 Travis St.,
*Chrm & Chief Exec Officer
Vice-Chrm—R. R. Gates
Pres & Chief Oper Officer
*Exec V-P & Chief Fin Officer
*Exec V-P & Gen Coun
Sr V-P & Chief Tax Counsel
Sr V-P—R. G. Bennett
Sr V-P—J. R.
V-P & Treas—D. M.
V-P & Cont—D. G.
Secy—Peggy
Accts— Deloitte Haskins & Sells
Employees: 2,900
Stock Exchange(s): NYS
*Also
BUSINESS: Natural
S.I.C. 4922
HOUSTON
(Subs. Toronto-Dom
P.O. Box 4747,
*Pres—J. D. Creighton
*Publisher & Vice-Pres
V-P & Gen Mgr
V-P (Prod)—R.
V-P (Mktg)—
Editor in Chief
Mgn. Editor—
Clr Dir—George
Adv Dir—Jerry Burton
Accts— Coopers &
Primary Bank—
Primary Law Firm—
Employees: 1,200
*Also
BUSINESS: Newspaper
S.I.C. 2711
HOUSTON TERMI
COLD STOR
701 N. San Jacinto
Tel. 713-
*Pres & Treas—J.
V-P—Arthur Schwartz
Secy—Irving L.
Primary Bank—
Primary Law Firm—
Grossberg
Sales: Over $2Mil
BUSINESS: Public
S.I.C. 4222; 4225
HOUSTON WIRE
9800 Market St.,
*Chrm & Pres—Michael
V-P (Sales)—Richard

RECORD OF COMMUNICATION

Ref. 15

[XXX] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO: Mr. Sewers
Houston Water
Authority
(713) 223-1095

FROM: Pam Fetzer
FIT - ICF
ICF Technology
(214) 744-1641

DATE: 3-14-89

TIME: 0830 hours

SUBJECT: Intake Locations for Lake Houston

SUMMARY OF COMMUNICATION:

The intakes are located on the dam (south end of lake on East Federal Road).

They also pump water from the Trinity River south of Liberty, TX. They are building a treatment plant north of Ellington Field to treat the water pumped from the Lynchburg Canal.

They service Nassau Bay, League City, Webster and Clear Lake City, among others for surface water. No water is obtained for drinking from Clear Lake.

Pam Fetzer

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

RECORD OF COMMUNICATION

Ref. 16

[XXX] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO: Will Moberly
Clear Lake City
Water Authority

FROM: Pam Fetzer
FIT - ICF
ICF Technology
(214) 744-1641

DATE: 3-13-89

TIME: 1530 hours

SUBJECT: Public Water Source for Clear Lake City

SUMMARY OF COMMUNICATION:

Mr. Moberly said that they purchase the majority of their water from Houston (Lake Houston). They service 42,000 people with 90% surface water and 10% ground water. They have 6 wells that are screened in the Lower Chicot Aquifer. The well locations are as follows:

1)	17507 El Camino Real	south end of town
2)	600 Eldorado	east end of town off Hwy 3
3)	4231 Manor	Clear Lake forest
4)	1600 Diane (golf course)	Taylor Lake, south of town
5)	900 Barry Blvd.	south of #2 off of Hwy 3
6)	1700 Racida (golf course)	east of #4 (irrigation)

The wells are screened at 200 to 250 feet. The static water level is ± 190 feet.

Pam Fetzer

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

RECORD OF COMMUNICATION Ref. 17	[XXX] Phone Call [ ] Discussion [ ] Field Trip [ ] Conference [ ] Other (Specify) (Record of Item Checked Above)

TO: Mr. Ernest Baker U.S.G.S. Hydrologist (512) 832-5791	FROM: Pam Fetzer FIT - ICF ICF Technology (214) 744-1641	DATE: 3-14-89 TIME: 1030 hours

SUBJECT: Hydrogeology of the Southeast Houston Area

SUMMARY OF COMMUNICATION:

Mr. Baker stated that the wells for Webster were screened in the Lower Chicot Aquifer; more specifically the Alta Loma Sand member. The member is 120 feet thick and is stratigraphically between the Upper Chicot and the Evangeline Formations. The base of the Lower Chicot is approximately 665 feet below sea level.

The Upper and Lower Chicot are interconnected but the Upper Chicot is a much tighter formation, consisting of a higher ratio of clay to sand.

The Evangeline aquifer is not used as frequently as a drinking water source in the SE Houston area as the encroachment of salt water is likely and the Alta Loma Sand, being a shallower water bearing unit is a prolific producer.

The Webster City well is 622 feet deep and is screened at 528 to 610 feet. The static water level in 1955 was 137 feet but in 1971 it was 207 feet.

CONTINUATION OF SUMMARY OF COMMUNICATION: The Webster Power Plant Well is 664 feet deep, screened between 500 to 645 feet. The static water level in 1951 was 90 feet and in 1971 was 200 feet.

Pam Fetzer

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

RECORD OF COMMUNICATION

Reference 18

[XXX] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO: Joe Castleberry
Texas Public Utilities Commission

FROM: Pam Fetzer
FIT - ICF
ICF Technology
(214) 744-1641

DATE: 3-7-89

TIME: 1100 hours

SUBJECT: Financial History of the Webster Generating Plant

SUMMARY OF COMMUNICATION:

He said that three units operated at this plant. The first turbine came on line in 1954 and the last in 1965. The last is the only unit currently operating. He did not know the net worth of this plant because the company values each unit separately and publishes the total cost of each type of unit. They do not generate separate reports for each plant. The original cost of the steam turbines is (b) (4) and the gas turbine is (b) (4)

Pam Fetzer

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES TO:

EPA Form 1300-6 (7-72)
Replaces EPQ HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

RECORD OF COMMUNICATION

Reference 19

[XXX] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO: Dan Bulla
Shareholder Relations
Houston Industries
(713) 629-3060

FROM: Pam Fetzer
FIT - ICF
ICF Technology
(214) 744-1641

DATE: 3-7-89

TIME: 1040 hours

SUBJECT: Value of the Webster Generating Plant

SUMMARY OF COMMUNICATION:

He said that Houston Lighting and Power has a book asset value of (b) (4) (b) (4) The net value is not known as it depends on what bank you ask.

The Webster Generating Plant is fully depreciated. He suggested that I speak with the Texas Public Utilities Commission.

Pam Fetzer

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72)
Replaces EPQ HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

RECORD OF COMMUNICATION

Reference 20

[XXX] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO: Janet Greenwood
Galveston City, Dept.
of Health - Supervisor
(713) 534-2531

FROM: Pam Fetzer
FIT - ICF
ICF Technology
(214) 744-1641

DATE: 3-14-89

TIME: 1110 hours

SUBJECT: Private Ground Water Wells

SUMMARY OF COMMUNICATION:

She said that in Galveston County, privately owned wells are in use. A rough estimate of the Southeast Houston area for people that pump ground water from their own wells is about 8,360 people.

Pam Fetzer

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72)
Replaces EPQ HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

Reference zr

TEXAS
WATER
DEVELOPMENT
BOARD

Report 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS

VOLUME II

RECORDS OF WELLS, 1892-1972

January 1974

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing Diameter (in.)	Casing Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level Above (+) below land surface datum (ft.)	Water Level Date of Measurement	Method of lift	Use of Water	Remarks
65-32-611	Seabrook Shipyard	McMasters and Pomeroy	1939	523	6	523	C	7	50	1939	T,E 5	Ind	Reported yield 150 gpm with 40 ft. drawdown when drilled.
• 612	Irma Christy	Wallie Burns	1913	521	4	521	C	12	49.4	June 7, 1940	N	N	Well destroyed.
• 613	Harris County WC and ID No. 50 El Lago	Layne Texas Co.	1965	590	10 6	530 590	CL	16	167	June 3, 1965	T,E 20	P	Screen from 537 to 577 ft. 2/
• 615	J. A. Wilkins	M. R. Pretty	1938	527	4	527	CL	18	48	June 17, 1938	N	N	Screen from 505 to 527 ft. Well destroyed. 2/
• 616	John Chapman	Wallie Burns	1920	660±	2	660±	C	10			N	N	Well destroyed.
• 621	Harris County WC and ID No. 55 Seabrook	Layne Texas Co.	1967	665	14 8	530 665	CL	19	151 218	[illegible]	[illegible]	P	Screen from 540 to 650 ft. Reported yield 1,254 gpm with 38 ft. drawdown when drilled. 1/ 2/
• 624	Harris County WC and ID No. 50 El Lago Well 3	do	1969	655	20 14	530 655	CL	16	213	June 5, 1969	[illegible]	P	Screen from 540 to 640 ft. Reported yield 1,153 gpm with 41 ft. drawdown when drilled. Test hole drilled to 664 ft. 2/
• 701	City of Webster Well 1	do	1955	622	10 5	-- 622	CL	24	137 207	Aug. 1955 Mar. 4, 1971	T,E 25	P	Screen from 528 to 610 ft. Test hole drilled to 693 ft. 1/ 2/
• 702	Houston Lighting and Power Co. Webster Plant Well 1	do	1952	636	16 10	475 636	CL	18	112	Apr. 10, 1952	T,E 200	Ind	126 ft. of screen between 480 and 618 ft. Reported yield 1,791 gpm with 98 ft. drawdown when drilled.
703	Houston Lighting and Power Co. Webster Plant Well 2	do	1951	664	24 20 10	494 492 664	CL	19	80 200	Sept. 1951 Feb. 11, 1971	Sub,E	Ind	125 ft. of screen between 500 and 645 ft. Reported yield 1,440 gpm with 76 ft. drawdown when drilled. 1/
705	S. Simbara	Layne Bowler Co.	1908	659	24 10	-- 659	CL	24	29.5 99.7	Apr. 3, 1931 Feb. 12, 1952	N	N	Screen from 547 to 659 ft. Formerly used for rice irrigation. Well destroyed. 2/ 3/
• 706	G. H. Witcomb	Aberson and Altemus	Old	563	2	563	C	26	34.9	Oct. 7, 1932	N	N	Well destroyed.
707	Webster School	Wallie Burns	1927	500±	3	500±	C	25	--	--	N	N	Well destroyed.
• 710	Galveston Houston Electric Co.	Layne Bowler Co.	1910	788	6	788	CL	5	--	--	N	N	61 ft. of screen between 588 and 653 ft. Well destroyed. 2/
• 711	Humble Pipe Line Co. Well 2	Layne Texas Co.	1938	660	8 6	592 660	CL	9	42 181.0	June 11, 1938 Feb. 17, 1971	Sub,E	Ind	Screen from 592 to 659 ft. Supplies pump station. 1/
738	Forest Park East Cemetery	do	1955	637	10 6	-- 637	CL	22	112	Mar. 2, 1955	T,E 30	Irr	Screen from 560 to 620 ft.
• 739	City of Webster Well 2	do	1967	645	14 8	515 645	CL	24	186 201.6	July 20, 1967 Mar. 4, 1971	T,E	P	Screen from 525 to 635 ft. Reported yield 510 gpm with 23 ft. drawdown when drilled. Test hole drilled to 670 ft. 1/ 2/
• 740	A. A. Polk	L. Wilson	1932	130	4	130	CU	27	--	--	C,E	D	Screen from 103 to 125 ft.

See footnotes at end of table.

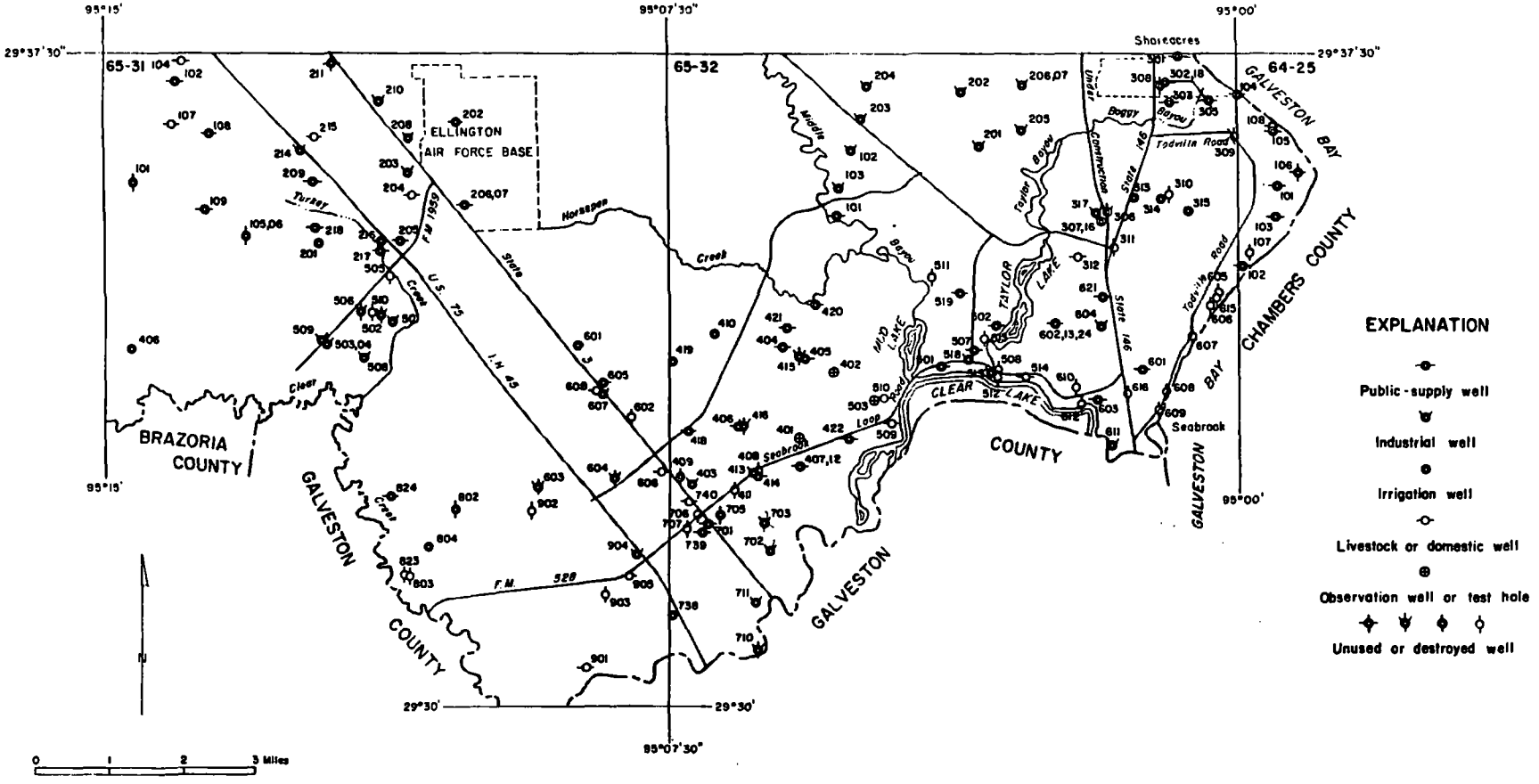

Figure 10
Locations of Wells in Area 9

Base from U.S. Geological Survey
topographic quadrangles

RECORD OF COMMUNICATION

Ref. 22

[XXX] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other (Specify)

(Record of Item Checked Above)

TO: Henry Fleming
Corps of Engineers
(409) 766-3070

FROM: Pam Fetzer
FIT - ICF
ICF Technology
(214) 744-1641

DATE: 3-14-89

TIME: 1120 hours

SUBJECT: Surface Water use in the S.E. Houston Area

SUMMARY OF COMMUNICATION:

Clear Lake and Clear Creek are used for recreation but not as a drinking water supply. Galveston Bay is used for commercial fishing and contact recreation. No intakes are on Clear Lake or Clear Creek because there are tidal surges up to I-45.

Pam Fetzer

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

Reference 23

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (copy from Item 1 of Form 1)
TX0006432

Form Approved.
OMB No. 2000-0059
Approval expires 12-31-85

exp 10.3.87

FORM 2C NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	95	03	15	29	33	00	Clear Lake in Segment 2425
002	95	04	30	29	33	30	of the Texas bay waters
003	95	06	15	29	31	45	
004	95	06	15	29	31	45	

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	NONCONTACT ONCE-THROUGH COOLING WATER AND PREVIOUSLY MONITORED EFFLUENTS (2/3 FLOW)	209.111 MGD			
002	NONCONTACT ONCE-THROUGH COOLING WATER AND PREVIOUSLY MONITORED EFFLUENTS (1/3) FLOW)	104.222 MGD			
003	LOW VOLUME WASTEWATER: floor drainage	0.047 MGD	COAGULATION, FLOCCULATION	2-D	1-G
			SEDIMENTATION, SKIMMING	1-U	XX
			AIR FLOTATION	1-H	
004	LOW VOLUME WASTEWATER: demineralizer regenerant boiler blowdown	0.069 MGD	COAGULATION, SEDIMENTATION	2-D	1-U
			NEUTRALIZATION	2-K	
104	METAL CLEANING WASTEWATER	0*	CHEMICAL PRECIPITATION	2-C	
			COAGULATION, SEDIMENTATION	2-D	
			NEUTRALIZATION	2-K	
	*infrequent discharge				
NOTE:	Sludge produced by all systems is disposed of offsite by a licensed contractor				

RECEIVED
APR 14 1987
6W-T S

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

EPA NUMBER (copy from Item 1 of Form 1)
1 X0006432

Form Approved.
OMB No. 2000-0059
Approval expires 12-31-85

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding — Complete one set of tables for each outfall — Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Aluminum Sulfate	- Wastewater Treatment	Sulfuric Acid	- Wastewater Treatment - Demineralizer Process - Water Conditioning
Ammonia	- Water Conditioning		
Chlorine	- Water Conditioning - Disinfection	Various trace	- Proprietary Polymers - Laboratory Reagents
Sodium Nitrite	- Water Conditioning		
Sodium Phosphates (di and tri)	- Water Conditioning - Cleaning Solutions		
Sodium Hydroxide	- Wastewater Treatment - Demineralizer Process		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES *(list all such pollutants below)* ☒ NO *(go to Item VI-B)*

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

April 2, 1987

Mr. Joe Korpics
Environmental Protection Agency
Region VI
1445 Ross Ave.
Dallas, Texas 75202-2733

SUBJECT: WEBSTER ELECTRIC GENERATING STATION
NPDES DISCHARGE PERMIT NO. TX0006432

Attached please find a standard Form 2C renewal application for the Webster Electric Generating Station. The existing discharge permit for this facility will expire on October 3, 1987. Sampling data results required in support of this renewal will be transmitted at a later date.

HL&P requests one addition to the renewed permit. Consistent with EPA's practice with other once through cooling water power plants, the following acknowledgement should be addended to Part III of the permit:

"The cooling water intake system is approved pursuant to the best technology requirements of Section 316(b) of the CWA"

The 316(b) Demonstration Document for this facility was submitted to EPA on January 27, 1981.

Should you have any questions with regard to this renewal, please do not hesitate to contact Kerry M. Whelan at (713)922-2200.

Sincerely,

W. F. McGuire, Manager
Environmental Protection Dept.

KMW/pm/L9

cc: Mr. R. A. Newton (TWC)

Attachments

RECORD OF COMMUNICATION Reference 24	[XXXX] Phone Call	[ ] Discussion	[ ] Field Trip
	[ ] Conference	[ ] Other (specify)	

(Record Of Item Checked Above)

TO: Gene Keepper U.S. EPA Biologist (214) 655-2263	FROM: Pam Fetzer FIT - ICF (214) 744-1641	DATE: 3-23-89 TIME: 1523 hours

SUBJECT: Wetlands in the Southeast Houston Area

SUMMARY OF COMMUNICATION:

Gene said that the area around the Houston Lighting and Power Plant (Webster) is a coastal wetland. The impoundments are located in this wetland. The wetlands are located in the area of Clear Lake, Clear Creek and into Galveston Bay.

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply Is Exhausted.

CME

Mail To: 1504 Main Street
Kirby Bldg. Suite 900
Dallas, TX 75201

REFERENCE 25

TWC Req. No. 31633

TEXAS WATER COMMISSION
Comprehensive GW Monitoring Evaluation (CME) Report

INSPECTION COVER SHEET

C.O.Use Only

SEP 1 6 1987

Date Entry Date

EPA ID No. TXD000837369

NAME OF COMPANY Houston Lighting and Power - Webster

SITE ADDRESS P.O. Box 1700, Houston, TX Tel 713 922-2186

COUNTY Harris TYPE OF INDUSTRY Electric Power Generation

Current GW Monitoring Status: HL&P is no longer sampling wells.

(Specify for each Waste Management Area "WMA")

Inspection Information:

Inspector(s) Robert Hahn Date(s) 4-24-87

Participants

Type of Inspection (check) EV ___ CME X → SA X

Evaluation:	S	U
A. Monitoring System	___	___
B. Sampling Procedures	___	___
C. Analysis & Results	___	X
D. Records & Response	___	___

Signed: Robert W. Hahn
Inspector
Date: 5-27-87

Signed: Marilyn Ann Long
Reviewer
Date: 9-15-87
PSL 9/16/87

S= Satisfactory U= Unsatisfactory

Overall Evaluation: Compliant X NonCompliant ___

TWC Reg. No. 31633

TEXAS WATER COMMISSION
Comprehensive GW Monitoring Evaluation (CME) Report

CONTENTS SHEET

FACILITY NAME Houston Lighting and Power

X 1. Code Sheet (0814)

X 2. Interoffice Memorandum (IOM)

X 3. Inspection Cover Sheet

X 4. Technical Report, with supporting Attachments

___ A. Monitoring System

___ B. Sampling Procedures

X C. Analysis and Results

___ D. Records and Response

___ 5. EV Inspection Checklist (if joint inspection with District Office)

___ 6. Notice of Violation (NOV) / Enforcement Letter to Facility

___ 7. Other (describe)_____

_____

_____

* If a required Checklist is omitted, Explain:_____

_____

_____

01/86

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : The Files **DATE:** 9-4-87

THRU : Mr. Russel Kimble, Reports and Management Group
Hazardous and Solid Waste Division

FROM : Robert Hahn, RCRA Ground-water Enforcement Unit
Hazardous and Solid Waste Division

SUBJECT: Houston Lighting and Power- Webster Generating Station

Attached is an addendum report to the Comprehensive Monitoring Evaluation (CME) of Houston Lighting and Power which includes results of analysis of monitor well samples taken during the inspection. These results were not available at the time of the CME report submittal. The attachment to this memo should be affixed to the original CME report.

Summary:

On April 24, 1987, a Comprehensive Monitoring Evaluation was conducted at the HL&P Webster Generating Station, Harris County, Texas.

Discrepancies that exist in the HL&P analytical program include:

1. Results of spikes, duplicates or blanks are not reported.

2. Cation- anion data for samples collected from MW-1 appears to be erroneous and disimilar to split sample results analyzed by the Texas Department of Health.

Houston Lighting and Power will be requested to explain the discrepancies in their data.

C. Analysis and Results

1. Tabulation of Analytical Methods - Attachment P
Indicate directly on Attachment which analyses are performed by:

   a. Off-site contract laboratory (*)
   b. On-site operator laboratory (**)
   c. Field measurement (***)

2. Are all samples analyzed with an EPA-approved method (yes/no)? YES . If not, indicate on Attachment (above) which methods are not EPA-approved.

3. Analytical Methods

   a. Has the operator consistently utilized the same analytical methodology during the monitoring program (yes/no)? YES

   b. Has the operator changed analytical laboratories during the monitoring program (yes/no)? Yes, however HL&P has retained APR as the contract lab for the past 3 years.

   c. Describe any inconsistencies and how the operator has tried to resolve them: None, see comments below (Section C.5.c) for peculiarities in the May 31, 1987 laboratory data.

4. What is the sample analysis turn-around time (i.e., the time required to receive results from the laboratory)? 1 month.

5. Laboratory Quality Assurance/Quality Control (QA/QC)

   a. Describe the laboratory's QA/QC program:

      The laboratory QA/QC program is uncertain. The necessary information such as results of laboratory blanks, spikes and replicates was not included.

   b. Example of analytical results and/or QA/QC results as reported by the laboratory to the operator - Attachment Q

   c. Do the results of the QA/QC program verify the validity and reliability of the laboratory and field-generated data (yes/no)?

      No QA/QC results were included with the laboratory results; therefore, the reliability of the data is questionable.

6. Review the operator's records of analytical results for:

   a. Parameters of initial year of sampling which exceed IPDWS;

      Attachment R

b. Parameters sampled as part of a Ground Water Quality Assessment Plan. Included as Attachment S.

7. Overall, does the analysis program enable the reliable detection of, and for assessment purposes, the quantification of a release of hazardous constituents to ground-water from the monitored WMA (yes/no)? No, without appropriate QA/QC data included in the report and the large discrepancy observed between the TWC and HL&P data for the MW-1 sample collected on 4-24-87, the analysis program is unreliable and therefore noncompliant.

8. Results of co-sampling events:

a. Results of Operator Sample Analysis - Attachment T

b. Results of TWC Sample Analysis

1) COC Tags - Attachment U

2) Tabulated Inorganic Constituents - Attachment V

3) Tabulated Organic Constituents - Not sampled

c. Do TWC results confirm operator results (yes/no)? NO . If not, describe apparent discrepancies between data sets and possible sources of error:

1. TWC values and APR values differ in some parameters by over 50 %. For example, bicarbonate values for MW-1 are 254 mg/L for the TWC sample and 3256 mg/L for the HLP sample.

A percent difference $\frac{(A - B)}{(A + B)/2} \times 100$ was calculated for each

of the cations and anions in the MW-1 sample:

Parameter (mg/L)	TWC	HLP	% Diff.
Calcium	559	716	25%
Magnesium	246	263	6%
Sodium	2139	2725	24%
Potassium	3	6	66%
Bicarbonate	254	3256	171%
Sulfate	568	350	47%
Chloride	4463	4173	6.7%

2. A percent error of less than 1 % was calculated for both the TWC and HLP MW-1 sample data. This seems peculiar considering the large difference in individual values between the TWC and HLP data sets (Attachment Z). It is likely that the data was incorrectly reported by the laboratory in order for the data to fall within an acceptable amount of error. Furthermore, the TWC data appears to fall in the range of historical results.

3. An explanation has been provided above noting the discrepancy between the TWC and HLP data. The error appears to lie only with the sample for MW-1. The HL&P report indicated that the bicarbonate analysis was performed on a sample that was acidified and filtered in the field. As indicated in Section II.B. of this CME, no samples were filtered in the field. Even though analyzing for bicarbonate from an acidified sample is considered incorrect in procedure, it is also peculiar that a high value for bicarbonate would be found on an acidified sample regardless of the acid that was used. It is possible that the other cations were analyzed from a field acidified sample because their values appear much higher with respect to the TWC samples, but this would not account for an error of less than 1 %.

d. Compare data sets to historical results - note here any parameters which do not occur within previously observed ranges:

A summary of the historical results is provided in Attachment W.

Historically, there exists some variability in the range of concentrations for conductivity, especially in monitor well 1. As shown in section 9 below, the quality of water at MW-1 is highly influenced by the quality of water from the discharge canal located approximately 100 feet to the north.

TOC values in all wells appear highest in 1982 during the first year of sampling which could correlate with a change in laboratories in 1983.

As shown in Attachment S, apparent small increases in concentrations of cation-anion data can be observed in the 4-24-87 samples relative to the 1984 Assessment Report data. These increases could be due to differences in sampling techniques, seasonal variability, or differences in contract laboratories.

9. Describe the ground-water quality, based on TWC results, utilizing Stiff diagrams, tri-linear plots, etc., to compare inorganic water quality between wells. Include the diagram(s) as Attachment X. Do the results indicate changes in ground-water quality downgradient of the WMA (yes/no)? NO . If yes, explain in comments.

Comments:

The ground water quality in the monitored zone at the HL&P site can be described as a predominantly sodium -chloride type water. As part of a ground water assessment program conducted in 1984, HL&P sampled and analyzed water from the 4 monitor wells as well as surface water from the impoundments and the cooling water discharge canal. A map showing the sample locations is presented as

Attachment Y_1. A table presenting the data is shown in Attachment Y_2. From this data, one can observe the similarity between the analysis of sample MW-1 and the discharge canal sample SI-4, especially in the magnesium, chloride and conductivity concentrations. The conclusions of the assessment report stated that any seepage from the surface impoundments that might be detected in the monitor wells would be masked by the ground-water mound from the discharge canal. This conclusion, although somewhat oversimplified, points out the difficulty in detecting a release from a surface impoundment or delineating the source of that release from one of several impoundments. The range in water qualities from the monitor wells and the surface impoundments is shown on the 1984 Assessment Report trilinear and stiff diagrams (Attachment X_2) and as summarized below: (Attachment X_1)

1. The inorganic acid surface impoundment (SI-1) plots in the lower field of the diamond shaped domain of the trilinear diagram due to its high bicarbonate and high sodium concentrations.

2. The demineralizer regenerant surface impoundment (SI-2) plots in the sodium-sulfate domain.

3. Monitor wells 2, 3 and 4 plot close to the discharge canal sample (SI-4), the demineralizer regenerant pond (SI-2) and the sludge drying bed (SI-6) indicating the possible influences of the surface waters on the ground water.

4. Monitor wells 2, 3 and 4 appear to plot in the middle of an imaginary line connecting monitor well 1 and the inorganic acid surface impoundment 1 (SI-1) indicating a lesser degree of influence from the discharge canal (SI-4) and possible mixing with water quality from the inorganic acid surface impoundment.

   Mixing- In order to determine if the ground-water qualities in the monitor well samples represent mixing of ground water with surface water sources, a binary mixing model (HC-GRAM4) was used. The output from the computer program indicated that the data did not fit any binary mixing calculations. If mixing has occurred, it is more complicated than the simple binary mixing model can predict.

5. A release from anyone of the surface impoundments would be difficult to determine. For example, a release from the demineralizer regenerant impoundment might result in increases in sulfate but decreases in chloride and alkalinity in the monitor well samples. At this site, cations and anions would not serve as useful indicator parameters.

TWC CME data

TWC and HL&P samples collected during the CME were plotted on stiff and trilinear diagrams (Attachment Z) to illustrate variability between the two sources of laboratory data. The TWC sample

collected at MW-1 more closely falls within the previous observed concentrations for this well than the HL&P sample.

10. Releases to ground water:

    a. Were hazardous constituents detected by TWC sample analysis (yes/no)? YES. If yes, identify unit and constituents.

    An arsenic concentration of 0.040 mg/L was detected in MW-1 near the IPDWS maximum concentration level for arsenic (As=0.050 mg/L). A Chromium concentration of 0.076 mg/ in MW-1 exceeds the IPDWS maximum concentration level of 0.050 mg/L for chromium. A mercury concentration of 0.0011 mg/L was detected in MW-2 near the IPDWS maximum concentration level for mercury (0.002 mg/L).

    The arsenic and chromium indicates a release has occurred either from a pond storing cooling tower blowdown or from a release of acidic wastes from which leaching of the soil beneath the impoundments has occurred . Both are difficult to prove based on the fact that historically low pH's have not been detected in any of the monitor wells. Soil sample results presented in the closure certification (9-2-86) possibly provide some evidence that leaching may have taken place. As shown on Attachment AA, the arsenic, barium, chromium, lead and selenium concentrations in the background samples were all higher than the values found in samples of the clay liner. This data possibly indicates that the metals were leached from the soils and carried into the ground water.

    b. Has the operator detected hazardous constituents in the ground water (yes/no)? NO. If yes, identify unit and constituents.

    Arsenic and chromium were not detected above the detection limits at the APR laboratory.

    c. Do the TWC sample results confirm operator results (yes/no)? . If no, explain in comments.

    NO. The detection limit used by HL&P for chromium (0.100 mg/L) is above the IPDWS for chromium, hence it was not detected.

    Mercury was not analyzed by the HLP contract lab.

    d. Do TWC sample results and/or operator results indicate non-hazardous constituents have been released from the WMA (yes/no)? NO. If yes, explain in comments.

ANALYTICAL METHODS

All samples obtained for monitoring should be analyzed in accordance with approved EPA methods which are listed below.

	Parameter	Method	Reference	Description
**	Conductivity	120.1	1	Conductometric
**	pH	150.1	1	Electrometric
*	Chloride	325.3	1	Titrimetric
*	Sulfate	375.4	1	Turbidimetric
*	Iron	236.1	1	AA/Aspiration
*	Manganese	243.1	1	AA/Aspiration
*	Sodium	273.1	1	AA/Aspiration
*	Phenol	420.1	1	Colorimetric
*	Total Organic Carbon	415.1	1	Combustion/IR
*	Total Organic Halogen	450.1	2	Combustion/HECD

1. EPA 600/4-79-020, March 1979, "Methods for Chemical Analysis of Water and Wastes".

2. EPA Interim Method, November, 1980, "Interim Method for Total Organic Halide".

Attachment P

ANALYTICAL
PETROLEUM
RESEARCH

Laboratories, Inc.

HOUSTON LIGHTING AND POWER COMPANY — MAY 31, 1987
12301 KURLAND
HOUSTON, TEXAS 77034 — INVOICE NO: 13272
ATTENTION: MR. RICHARD BYE — CERTIFICATE #32134

SUBMITTED BY: DOUG CHIN
LOCATION: WEBSTER
DATE OF SAMPLE: APRIL 24, 1987 DATE RECEIVED: APRIL 24, 1987
DESCRIPTION: MW-1 A

SAMPLE ANALYSIS	RESULTS IN MG/L	DATE	TIME	ANALYST
CALCIUM	716	05/24	0900	GT
MAGNESIUM	263	05/14	0800	GT
SODIUM	2725	05/18	0800	DD
POTASSIUM	6.0	05/14	1200	GT
BICARBONATE	3256 *	05/20	1630	DD
CARBONATE	<1	05/20	1630	DD
CHLORIDE	4173	05/18	1100	TP
SULFATE	350	05/18	1300	JR
TOTAL DISSOLVED SOLIDS	11,546	04/29	0900	GT
MANGANESE	0.8	05/14	1000	DD
FLUORIDE	0.2	05/20	1600	TP
ARSENIC	<0.02	05/11	1200	GT
BORON	1.45	05/14	1100	GT
CADMIUM	<0.01	05/11	1100	GT
CHROMIUM	<0.1	05/11	1200	GT
IRON	8.33	05/19	0800	DD

Attachment Q

3323 Gulf Freeway • P.O. Box 1188 • Dickinson, Texas 77539 • Phone (713) 337-6700

TDWR Registration #31633

WEBSTER GENERATING STATION

Groundwater Parameters and their Concentrations Which Exceed the EPA Interim Primary Drinking Water Standards

	Parameter	Concentration
1st Quarter		
Well 3	Gross Beta	25 ± 3 pCi/l
	Coliform	150 1/100 ml
Well 4	Gross Beta	7 ± 2 pCi/l
	Coliform	1700 1/100 ml
2nd Quarter		
Well 1	Barium	13.4 mg/l
Well 2	Barium	3.7 mg/l
Well 3	Barium	4.1 mg/l
Well 4	Barium	3.5 mg/l
3rd Quarter		
No parameters found to exceed drinking water standards		
4th Quarter		
Well 1	Mercury	.003 mg/l
Well 4	Mercury	.003 mg/l
	Coliform	8 1/100 ml

Attachment R

Parameters	MW-1 UPGRADIENT 1984 Assessment	MW-1 UPGRADIENT TWC-1987 CME	MW-2 DOWNGRADIENT 1984 Assessment	MW-2 DOWNGRADIENT TWC-19[illegible] CME
Calcium	560	559	59	69
Magnesium	270	246	34	42
Potassium	3.8	3	2.4	2
Sodium	1700	2139	300	419
Acidity	0	–	0	–
Alkalinity	190	208	374	492
Sulfate	450	568	160	248
Chloride	3900	4463	220	352
Fluoride	0.9	0.6	1.3	1.4
Nitrate	<0.05	0.03	<0.05	0.66
Silica	12.	19.	2	21
Copper	0.28	0.064	<0.01	<0.02
Iron	0.25	74.6	<0.05	3.71
Zinc	1.6	0.150	0.05	<0.02
Conductivity	12 000.	17 000.	1600.	3190
Dissolved Solids	8700.	8123	990	1453
pH	7.24	7.02	7.93	7.1[illegible]

Attachment S

Comparison of Results of Assessment 1984 with CME-TWC 1987 for MW1 and MW-2.

The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

June 29, 1987

Mr. Robert Hahn
Texas Water Commission
Hazardous & Solid Waste Division
P. O. Box 13087
Capitol Station
Austin, Texas 78711

SUBJECT: ANALYTICAL RESULTS OF SAMPLES FROM GROUNDWATER MONITORING WELLS AT HL&P'S WEBSTER GENERATING STATION TWC NO. 31633

Dear Mr. Hahn:

Attached per your request are the results of the two samples we collected in duplicate with your samples on April 24, 1987. As discussed with you when you made your inspection visit, our compliance samples are analyzed by an outside contract commercial laboratory, in this case, APR Laboratories.

Should you have any additional questions, please contact Mr. D. B. Chin at (713) 922-2203.

Sincerely yours,

R. W. Lawhn, Manager
Environmental Assessment &
Waste Management
Environmental & Research Department

DBC/jcc:L10

Attachments

Attachment T

A P R
Laboratories, Inc.

ANALY ICAL
PETROLEUM
RESEARCH

HOUSTON LIGHTING AND POWER COMPANY
12301 KURLAND
HOUSTON, TEXAS 77034
ATTENTION: MR. RICHARD BYE

MAY 31, 1987
INVOICE NO: 13272
CERTIFICATE #32134

SUBMITTED BY: DOUG CHIN
LOCATION: WEBSTER
DATE OF SAMPLE: APRIL 24, 1987 DATE RECEIVED: APRIL 24, 1987
DESCRIPTION: MW-1 A

SAMPLE ANALYSIS	RESULTS IN MG/L	DATE	TIME	ANALYST
CALCIUM	716	05/24	0900	GT
MAGNESIUM	263	05/14	0800	GT
SODIUM	2725	05/18	0800	DD
POTASSIUM	6.0	05/14	1200	GT
BICARBONATE	3256 *	05/20	1630	DD
CARBONATE	<1	05/20	1630	DD
CHLORIDE	4173	05/18	1100	TP
SULFATE	350	05/13	1300	JR
TOTAL DISSOLVED SOLIDS	11,546	04/29	0900	GT
MANGANESE	0.8	05/14	1000	DD
FLUORIDE	0.2	05/20	1600	TP
ARSENIC	<0.02	05/11	1200	GT
BORON	1.45	05/14	1100	GT
CADMIUM	<0.01	05/11	1100	GT
CHROMIUM	<0.1	05/11	1200	GT
IRON	8.33	05/19	0800	DD

3323 Gulf Freeway • P.O. Box 1188 • Dickinson, Texas 77539 • Phone (713) 337-6700

CERTIFICATE NUMBER: 32134

* THIS SAMPLE WAS FILTERED AND ACIDIFIED IN THE FIELD.

QUALITY ASSURANCE: THESE ANALYSES ARE PERFORMED IN ACCORDANCE WITH EPA GUIDELINES FOR QUALITY ASSURANCE. THESE PROCEDURES INCLUDE THE FOLLOWING AS MINIMUM REQUIREMENTS: COMPARISONS AGAINST KNOWN STANDARDS IN EACH RUN, ONE IN TEN SAMPLE SPLITS, AND A QUARTERLY METHODS REVIEW AGAINST KNOWN SPIKE SAMPLES.

A & R LABORATORIES, INC.

Sammy Russo

Sammy Russo

SR/gfl

A P R
Laboratories, Inc.

ANALYTICAL
PETROLEUM
RESEARCH

HOUSTON LIGHTING AND POWER COMPANY
12301 KURLAND
HOUSTON, TEXAS 77034
ATTENTION: MR. RICHARD BYE

MAY 31, 1987

INVOICE NO: 13273
CERTIFICATE #32133

SUBMITTED BY: DOUG CHIN
LOCATION: WEBSTER
DATE OF SAMPLE: APRIL 24, 1987 DATE RECEIVED: APRIL 24, 1987
DESCRIPTION: MW-2 A

SAMPLE ANALYSIS	RESULTS IN MG/L	DATE	TIME	ANALYST
CALCIUM	76.2	05/24	0900	GT
MAGNESIUM	42.1	05/14	0800	GT
SODIUM	306	05/18	0800	DD
POTASSIUM	3.4	05/14	1200	GT
BICARBONATE	450	05/20	1630	DD
CARBONATE	<1	05/20	1630	DD
CHLORIDE	345	05/18	1100	TP
SULFATE	175	05/18	1300	JR
TOTAL DISSOLVED SOLIDS	1400	04/29	0900	GT
MANGANESE	<0.1	05/14	1000	GT
FLUORIDE	0.4	05/20	1600	TP
ARSENIC	<0.02	05/11	1200	GT
BORON	<0.1	05/14	1100	GT
CADMIUM	<0.01	05/11	1100	GT
CHROMIUM	<0.1	05/11	1200	GT
IRON	2.07	05/19	0800	DD

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CERTIFICATE NUMBER: 32135

QUALITY ASSURANCE: THESE ANALYSES ARE PERFORMED IN ACCORDANCE WITH EPA GUIDELINES FOR QUALITY ASSURANCE. THESE PROCEDURES INCLUDE THE FOLLOWING AS MINIMUM REQUIREMENTS: COMPARISONS AGAINST KNOWN STANDARDS IN EACH RUN, ONE IN TEN SAMPLE SPLITS, AND A QUARTERLY METHODS REVIEW AGAINST KNOWN SPIKE SAMPLES.

A P R LABORATORIES, INC.

Sammy Russo

SR/gfl

No. GW 03801

P.O. Box 13087, Capitol Station
Austin, Texas 78711

Org. No. 444
Sample No. MW-1

Owner H L & P Address Houston, TX Zip

County Harris Well No. MW-1

Location Webster station # 31633

Date Drilled Depth Aquifer Beaumont FM

Water Level Sample After Pumping Mins. (Hrs.) Yield GPM Temperature °F

Point of Collection well MW-1 Appearance Clear (Turbid) Red. & Silty. Color

Use monitor Remarks (Over)

Date Collected 4-24-87 Time 10:00 AM By Robert Hahn

Send copy of completed analysis to Robert Hahn TDWR Office No. 1116A

TDWR-0778 (Rev. 10-24-84)

TEXAS DEPARTMENT OF WATER RESOURCES

No. GW 03801
Point of Collection MW-1

P.O. Box 13087, Capitol Station

[redacted]

JUN 12 1987

Work No. 4003
Org. No. 444
Sample No. MW-1

Lab Used TDH L[redacted] Method of Preservation none

Type of Facility Date Completed JUN 12 87 Analyst's Signature

1qt

	Mg/l	EPM		Mg/l	EPM		Other Ions	Mg/l
Silica	19		Carbonate	0	0.00	X	Bromide	3.1
Calcium	559	27.96	Bicarbonate	254	4.16	Y	Iodide	1.2
Magnesium	246	20.22	Sulfate	568	11.83			
Sodium	2139	93.00	Chloride	4463	125.82			
	Total	141.18	Fluoride	0.6	0.03			
Potassium	3	0.08	Nitrate-N	0.03	0.00			
Boron	0.91	141.26	pH 7.6		Total 141.85			
Iron	see Heavy metals		Dissolved Solids (sum)	8123				
			Phenolphthalein Alkalinity as $CaCO_3$					
Remarks			Total Alkalinity as $CaCO_3$		(4.16) 208			
			Total Hardness as $CaCO_3$					
			Specific Conductance (Micromhos/CM)		6250			
			Diluted Conductance (Micromhos/CM)					

Attachment 1

"□" Items will be analyzed if checked, total Iron requires separate sample.

TDWR-0778 (Rev. 10-24-84)

APR 30 1987

HM 11346 District 7 County Harris Basin

Discharger Name HL&P Time Collected 11:50 AM

Agent Name Webster Point of Collection monitor well MW-2

Method of Flow Measurement

PERMIT NUMBER	PAGE NO.	CARD TYPE	DATE Mo.	DATE Day	DATE Yr.	MAT. STAMP
9	10 12	13	14 15	16 17	18 19	20
1633		C	04	08	87	

Chlorine Contact Time

Date Shipped 4-27-87

Collector's Signature Dennis Hall

21 CODE	26 PARAMETER VALUE	35 CODE	40 PARAMETER VALUE	49 CODE	54 PARAMETER VALUE 62
Flow (gpd)	0056	Water Temperature (°F)	00011	pH	00400
D.O. (mg/l)	0300	Turbidity (JTU)	00070		

TEXAS DEPARTMENT OF WATER RESOURCES

HM 11346 District 7 Lab Used TDH Lab. No. EW7 1412

Type Sample: Heavy Metals Material Sampled: Raw, Partially Treated, Fi

Lab HW-2 Composite Hr. Method of Preservation ice / nitric

Observations Type Facility surf. impoundment

Auxiliary Tags

APR 27 '87 Date Completed

Analyst's Signature

21 CODE	26 PARAMETER VALUE	35 CODE	40 PARAMETER VALUE	49 CODE	54 PARAMETER VALUE 62
Arsenic ✓	<005	Barium ✓	071		
Cadmium ✓	<010	Chromium ✓	<020	Copper ✓	<030
Lead ✓	<050	Manganese ✓	043	Mercury ✓	0.1
Nickel ✓	<020	[illegible]		[illegible]	
Zinc ✓	<030	Iron (Total) ✓	3710	Tolerance µg/l	

Attachment 4

Attachment V Tabulated TWC-CME Results

...ter (mg/L)	MW-1	MW-2
...m	559	69
...nesium	246	42
...ssium	3	2
...dium	2139	419
...lica	19	21
...oron	0.91	0.35
...ron	74.6[2]	3.710[2]
...arbonate	0	0
...icarbonate	254	600
...lfate	568	248
...hloride	4463	352
...Fluoride	0.6	1.4
...Nitrate	0.03	0.66
...Bromide	3.1	0.3
...Iodide	1.2	5.9
...Senic	0.040 RWH	0.025
...Barium	0.052	0.071
...admium	<0.010	<0.010
...hromium	0.076[1] RWH	<0.020
...Copper	0.064	<0.020
...ead	<0.050	<0.050
...Manganese	0.850[2]	RWH 0.043
...lercury	0.0004	0.0011
...Nickel	0.060	<0.020
...Zinc	0.150	<0.020

...otnote
1. Exceeds IPDWS Maximus Concentration Level
2. Exceeds Secondary Drinking water Standards

Attachment W Summary of Historical Results

Parameter / Units / Sample Type	Depth to Water (Ft. Below Surface)	pH Standard Grab	Conductivity (µmhos/cm) Grab	Total Organic Carbon (TOC) mg/l Grab	Total Organic Halogen (TOX) mg/l Grab	Chloride mg/l Grab	Iron mg/l Grab	Manganese mg/l Grab	Phenols mg/l Grab	Sodium mg/l Grab	Sulfate mg/l Grab
Date											
**First Year (initial) Background arithmetic mean		± **	± **	± **	± **						
HW1 052882	ND	7.13	9300	16	0.114	2760	0.39	0.15	< 0.01	1500	440
080582	6	7.13	9675	56.	0.091	3430	0.05	0.21	< 0.01	1000	305
092982	7	7.03	12000	42	0.026	4094	1.00	0.17	< 0.01	2300	350
111982	7	7.25	13750	33	0.025	4931	1.45	0.11	< 0.01	1363	440
1983	5	7.3	9000	4.2	0.04	4290	2.35	0.15	<0.01	1900	1170
1984	8.28	7.2	14,500	1.0	0.01	4,900	0.11	0.04	<0.001	2,100	620
1985	9.48	6.9	15,925	1.4	<0.005						512
1986	9.48	6.72 7.02	7,625 3863	13.0 5.5	0.009 <0.005	3600	4.7	0.18	<0.005	1015	160
1987 CME						4173	8.33	0.8	–	2725	350
1987 TWC	9.65	7.02	17,000	–	–	4463	74.6	0.85	–	2139	568

Parameter / Units / Sample Type	Depth to Water (Ft. Below Surface)	pH Standard Grab	Conductivity (µmhos/cm) Grab	Total Organic Carbon (TOC) mg/l Grab	Total Organic Halogen (TOX) mg/l Grab	Chloride mg/l Grab	Iron mg/l Grab	Manganese mg/l Grab	Phenols mg/l Grab	Sodium mg/l Grab	Sulfate mg/l Grab
Date											
**First Year (initial) Background arithmetic mean		± **	± **	± **	± **						
HW2 052882	ND	7.85	2600	19	0.176	522	0.3	0.11	<0.01	1300	250
080582	10	7.58	2500	70	0.103	691	0.48	0.07	<0.01	350	233
092982	11	7.47	3000	68	0.043	534	1.70	0.19	<0.01	420	170
111982	11	7.87	2700	25	0.144	584	1.75	0.20	<0.01	265	200
1983	9	7.61	1507	6	0.07	350	0.75	0.05	<0.01	325	185
1984	7.61	7.4	2300	1	<0.005	330	<0.05	0.03	0.003	340	190
1985	9.11	7.27	1853	2.3	<0.005	–	–	–	–	–	168
1986	8.11	7.07 7.8	3400 1375	<1.0 7.0	<0.005 <0.005	254	3.1	0.06	0.02	123	150
1987 CME						345	2.07	40.1	–	306	175
1987 TWC	11.46	7.10	3190	–	–	352	3.71	0.043	–	419 Pwsa	248

Attachment W.

MW3

Parameter Units Sample Type	Ground Water Elev. Ft. Above Datum	pH Standard Grab	Conductivity micro mho Grab	Total Organic Carbon mg/l Grab	Total Organic Halogen mg/l Grab	Chloride mg/l Grab	Iron mg/l Grab	Manganese mg/l Grab	Phenols mg/l Grab	Sodium mg/l Grab	Sulfate mg/l Grab
Date											
**First Year (Initial) Background arithmetic mean		± **	± **	± **	± **						
052882	ND	7.36	2400	31	0.261	591	0.21	<0.05	< 0.01	400	100
080582	17	7.16	2500	80	0.100	549	0.30	0.07	< 0.01	290	230
092982	17	7.14	2600	85	0.048	514	1.10	0.18	< 0.01	350	62
111982	16	7.76	2400	18	0.247	568	2.05	0.17	< 0.01	240	50
1983	15	7.11	2437	2.7	0.07	750	1.47	0.05	<0.01	410	58
1984	3.7	7.2	3400	<1.0	<0.005	780	<0.05	0.01	0.005	380	65
1985	3.94	6.87	2955	0.7	<0.005	—	—	—	—	—	—
1986	3.94	6.88	2625	1.25	<0.005	340	2.0	<0.01	<0.005	208	42
1987	Not sampled.										

MW4

Parameter Units Sample Type	Ground Water Elev. Ft. Above Datum	pH Standard Grab	Conductivity micro mho Grab	Total Organic Carbon mg/l Grab	Total Organic Halogen mg/l Grab	Chloride mg/l Grab	Iron mg/l Grab	Manganese mg/l Grab	Phenols mg/l Grab	Sodium mg/l Grab	Sulfate mg/l Grab
Date											
**First Year (Initial) Background arithmetic mean		± **	± **	± **	± **						
052882	ND	7.51	2300	29	<0.005	345	< 0.05	< 0.05	< 0.01	410	220
080582	12	7.44	2500	112	0.106	505	< 0.05	0.36	<0.01	370	203
092982	13	7.37	2600	75	0.036	444	0.56	0.42	<0.01	450	200
111982	13	7.97	2500	21	0.061	492	1.90	0.42	<0.01	270	175
1983	11	7.45	2300	3	0.07	570	0.22	0.08	<0.01	445	303
1984	3.69	7.2	3400	<1	0.006	780	<0.05	0.01	0.005	380	65
1985	9.43	7.25	2935	0.7	<0.005	—	—	—	—	—	—
1986	7.43	7.13	2800	2.75	<0.005	580	3.4	0.56	<0.005	272	148
1987	Not sampled.										

APR 30 1987

. HM 11348 District 7 County Harris Basin

charger Name Time Collected 10:30 A

nt Name Point of Collection Equipment - Follows Bailer decon

thod of Flow Measurement

PERMIT NUMBER	PAGE NO.	CARD TYPE	DATE Mo.	DATE Day	DATE Yr.	MAT. STAMP
9	10 12	13	14 15	16 17	18 19	20
1633			04	24	87	

Chlorine Contact Time

Date Shipped 4-27-87

Collector's Signature Peter W. Hahn

21 CODE	26 PARAMETER VALUE	35 CODE	40 PARAMETER VALUE	49 CODE	54 PARAMETER VALUE 62
ow (gpd)		Water Temperature (°F)		pH	
	0056		00011		00400
O. (mg/l)		Turbidity (JTU)			
	0500		00070		

XAS DEPARTMENT OF WATER RESOURCES

HM 11348 District 7 Lab Used CDH Lab. EW7 1414

e Sample: Heavy Metals Material Sampled: Raw, Partially Treated

b Equipment BLANK Composite Hr. Method of Preservation Nitric/ice

servations Type Facility Surf Imp

Auxiliary Tags

APR 27 87 Date Completed

Analyst's Signature

21 CODE	26 PARAMETER VALUE	35 CODE	40 PARAMETER VALUE	49 CODE	54 PARAMETER VALUE 62
Arsenic ✓		Barium ✓			
	<005		<020		
Cadmium ✓		Chromium ✓		Copper ✓	
	<010		<020		<020
Lead ✓		Manganese ✓		Mercury ✓	
	<050		<020		<.1
Nickel ✓		~~Selenium~~		~~Silver~~	
	<020				
Zinc ✓		Iron (Total) ✓		Values in mg/L	
	<020		51		

Attachment L

...o. HM 11347 District ____ County Harris Basin ____

...ischarger Name Hi ... Time Collected 4-24-87 / 10:00 AM

...lant Name Wes ... Point of Collection monitor well MW-1

...lethod of Flow Measurement ____

PERMIT NUMBER	PAGE NO.	CARD TYPE	DATE Mo.	DATE Day	DATE Yr.	MAT. STAMP
1 ... 9	10 ... 12	13	14 15	16 17	18 19	20
3 1 6 3 3			0 4	2 4	8 7	

Chlorine Contact Time ____

Date Shipped 4-27-87

Collector's Signature [signature]

21 CODE	26 PARAMETER VALUE	35 CODE	40 PARAMETER VALUE	49 CODE	54 PARAMETER VALUE 62
Flow (gpd)	0 0 5 6	Water Temperature (°F)	0 0 0 1 1	pH	0 0 4 0 0
D.O. (mg/l)	0 3 0 0	Turbidity (JTU)	0 0 0 7 0		

TEXAS DEPARTMENT OF WATER RESOURCES

...lo. HM 11347 District 7

...ype Sample: Heavy Metals ... 3 1 6 3 3

...Grab MW-1 Comp... Hr.

...Observations ____

APR 27 '87

Lab Used TDH ... Lab No. ...

Material Sampled, Raw, Par...

Method of Preservation ...

Type Facility Surf imp.

Auxiliary Tags ____

Date Completed ...

Analyst's Signature [signature]

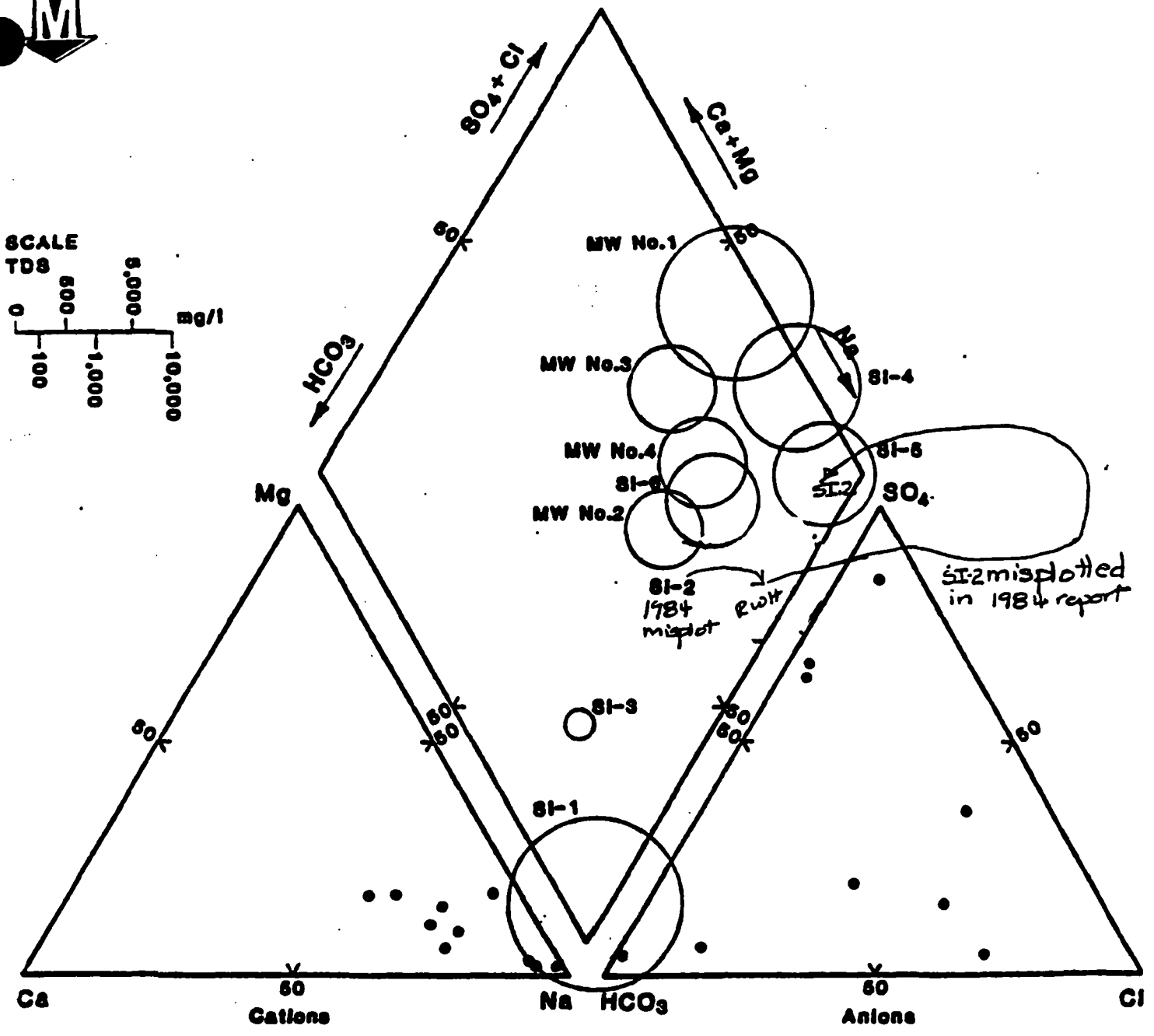
21 CODE	26 PARAMETER VALUE	35 CODE	40 PARAMETER VALUE	49 CODE	54 PARAMETER VALUE 62
Arsenic ✓	< 1 0	Barium ✓	5		
Cadmium ✓	< 1 0	Chromium ✓	7 6	Copper ✓	6 4
Lead ✓	< 5 0	Manganese ✓	3 5 0	Mercury ✓	0 . 4
Nickel ✓	6 0	[redacted]		[redacted]	
Zinc ✓	1 5 0	Iron (Total)	1 4 0 0 0	Values are mg/l	

Attachment 4

Attachments X_1, X_2
Attachments Y_1, Y_2

Tables and Diagrams
from HL&P Ground Water
Quality Assessment Report
May 1984

Attachment X1



Percent of Total Milliequivalents per Liter

Figure 16. Piper Trilinear Diagram ,Webster Generating Station, Monitor Wells and Surface Impoundments.

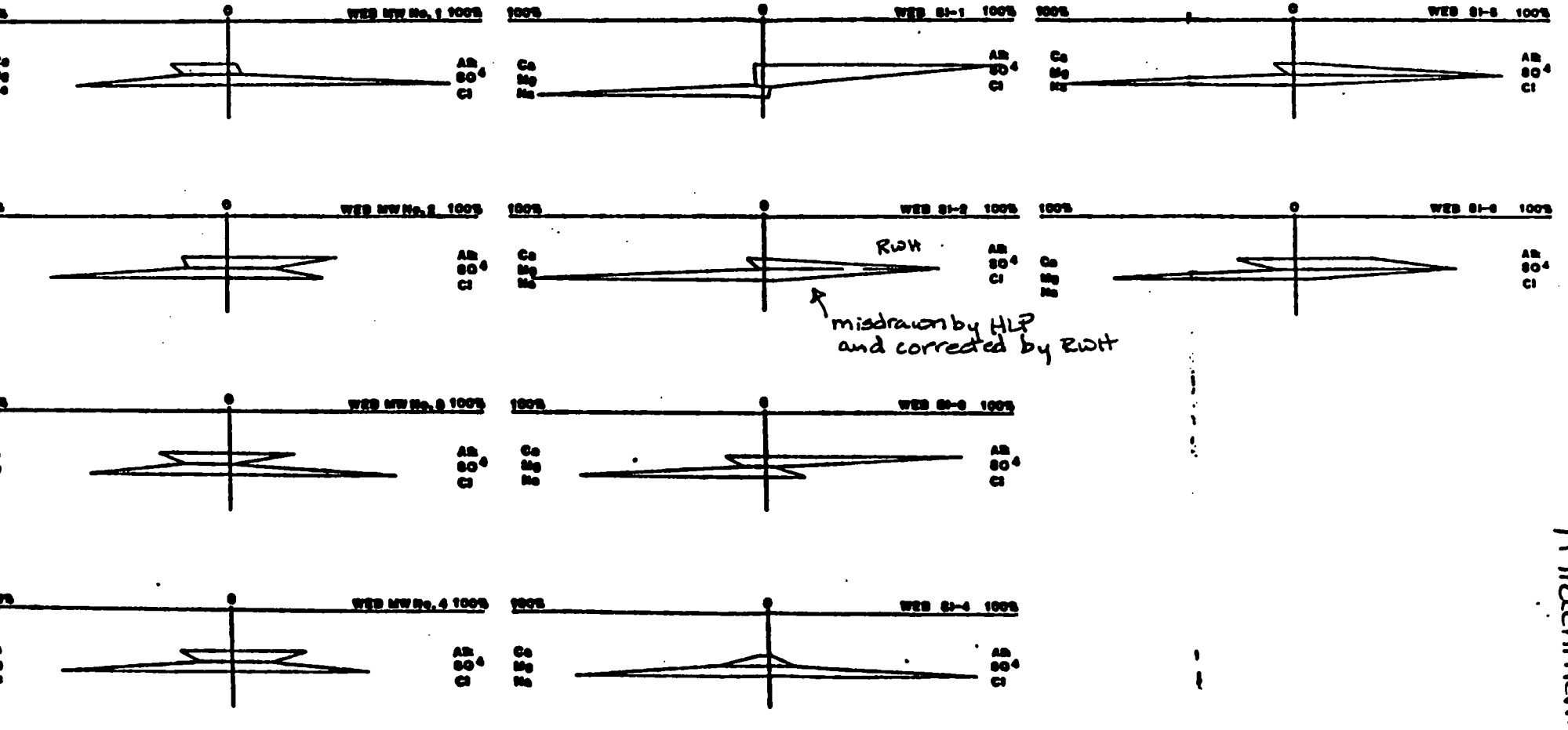


Figure 14. Modified Stiff Diagrams, Webster Generating Station Monitor Wells and Surface Impoundments.

Attachment A2

Attachment 1/1

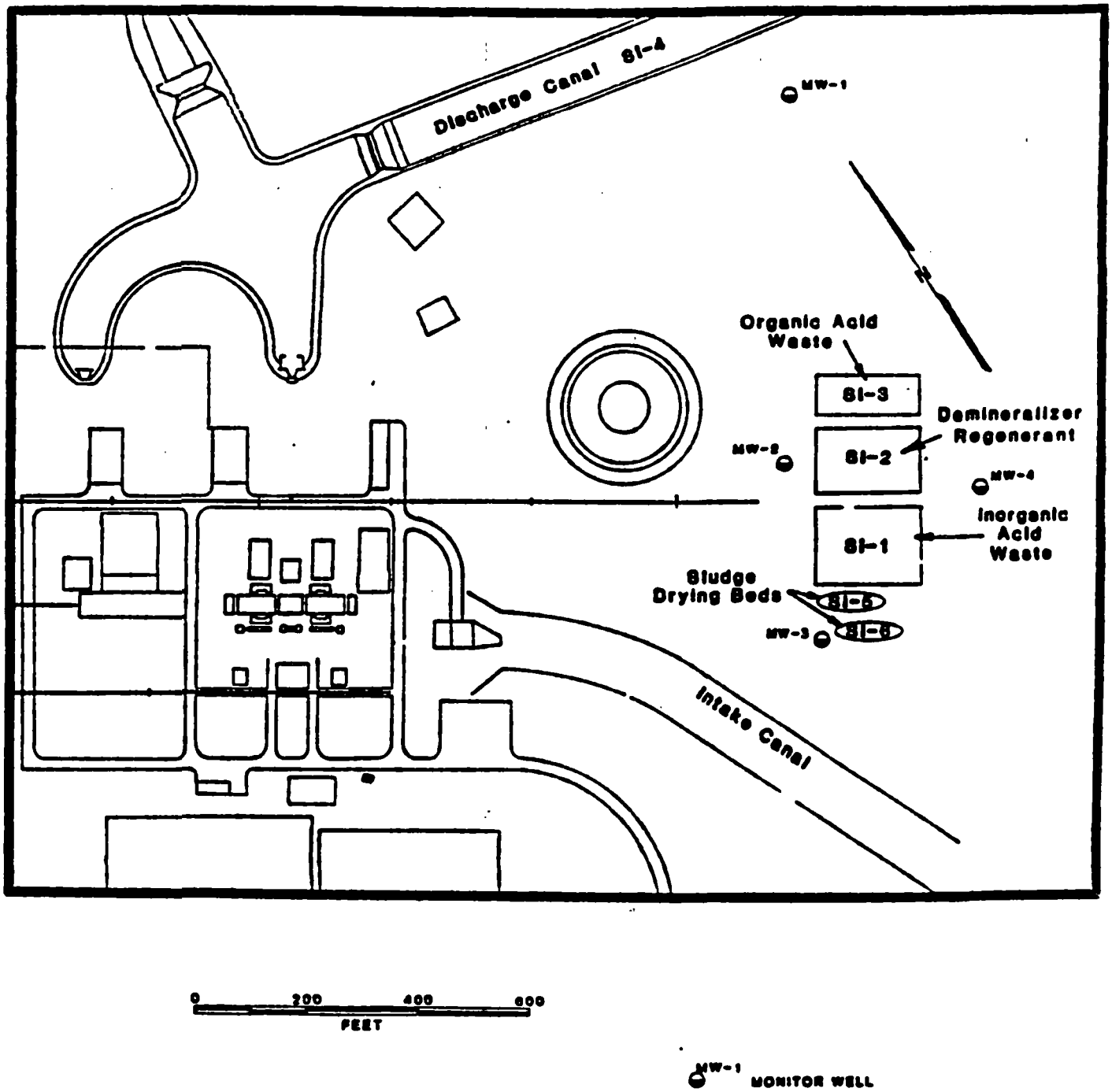


Figure 13. Location of Monitor Wells and Surface Impoundments, Webster Generating Station.

TABLE 8

Water Quality Analysis, Webster Generating Station, Monitor Wells and Surface Impoundments

	MW No. 1	MW No. 2	MW No. 3	MW No. 4	SI-1	SI-2	SI-3	SI-4	SI-5	SI-6
Calcium	560	59	200	130	34	71	11	110	64	150
Magnesium	270	34	77	50	2.1	8.7	3.8	260	1.7	24
Potassium	3.8	2.4	3.2	7.0	5.2	5.7	2.5	78	4.1	5.5
Sodium	1,700	300	440	530	4,300	1,300	60	2,100	1,100	620
Acidity	0	0	0	0	0	1,600	0	0	0	0
Alkalinity	190	374	420	410	8,300	0	87	120	120	800
Sulfate	450	160	60	220	220	3,600	5	640	1,400	1,600
Chloride	3,900	220	740	560	120	150	12	3,700	90	85
Fluoride	0.9	1.3	1.0	1.2	4.6	1.4	0.49	0.55	0.46	3.3
Nitrate	<0.05	<0.05	<0.05	<0.05	5.9	<0.05	6.1	<0.05	<0.05	<0.05
Silica	12	2	2	8	27	19	7	<1	10	3
Copper	0.28	<0.01	0.01	<0.01	0.63	0.07	0.48	0.21	0.07	<0.01
Iron	0.25	<0.05	0.33	0.37	0.59	5.9	15	0.35	0.71	0.78
Zinc	1.6	0.05	2.7	3.0	0.99	2.1	0.29	1.0	2.6	1.7
Conductivity	12,000	1,600	3,200	3,000	26,000	11,000	290	14,000	3,100	4,600
Dissolved Solids	8,700	990	1,600	1,500	9,900	4,800	360	7,300	2,300	3,200
pH	7.24	7.93	7.2	7.27	12.89	1.93	7,95	8.11	8.31	10.24

All concentrations are in mg/L except Conductivity (umhos) and pH (standard units).

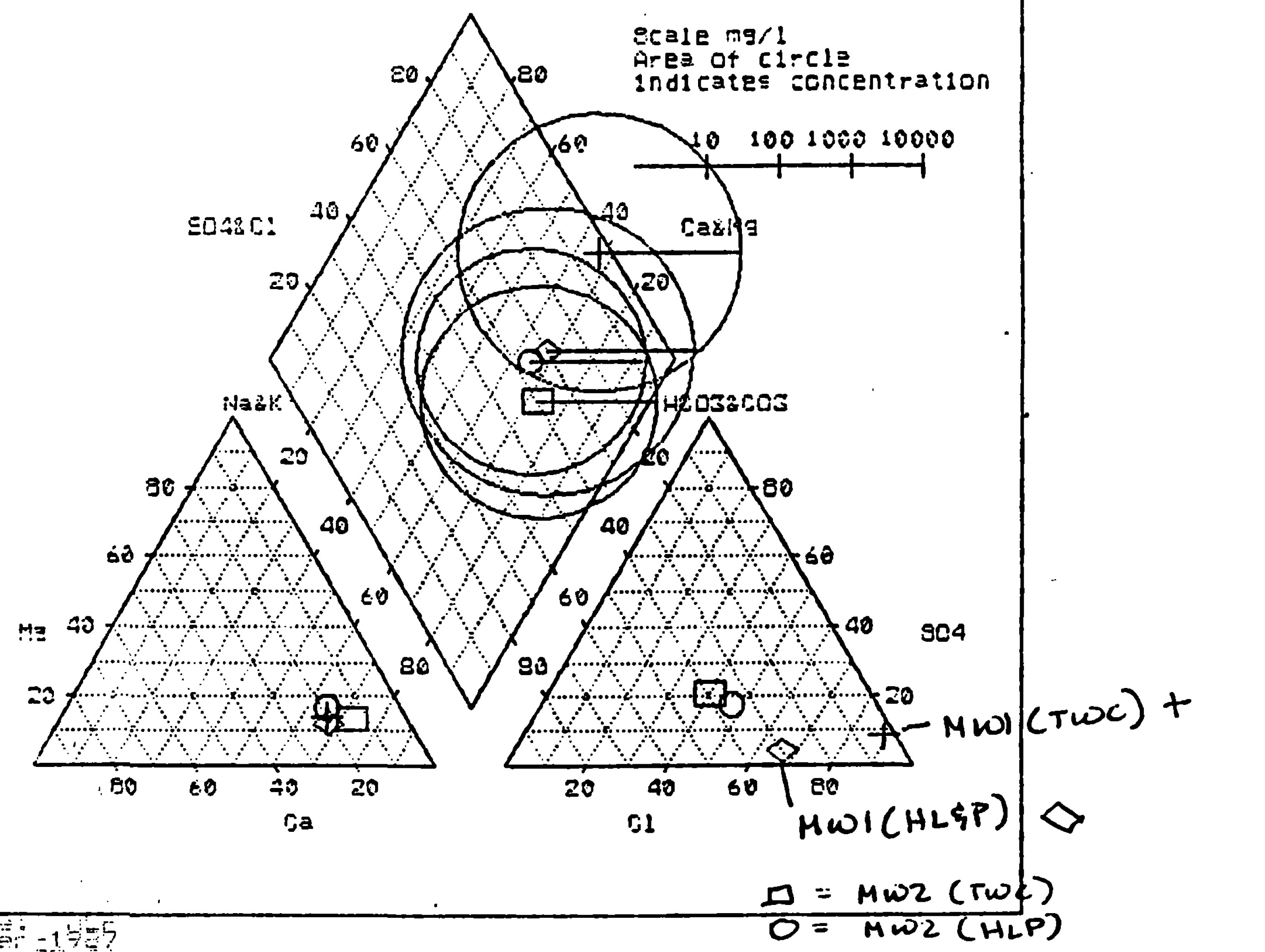
HC-GRAM

HydroChemical Graphic Representation Analysis Methods

Version: HC-GRAM 1.09

04-Sep-1987 09:41:33.17

Project: hlp webster April 24, 1987



[illegible]
0?-Sep-1987
09:44:55.90

Chemical Constituents in ppm

Sample	Ca	Mg	Na	K	HCO3	CO3
[illegible]	[illegible]	[illegible]	2129.00	3.00	[illegible]	0.00
[illegible]	716.00	[illegible]	2725.00	6.00	3056.00	0.00
[illegible]	46.00	42.00	419.00	5.50	200.00	0.00
[illegible]	76.00	42.10	306.00	3.40	450.00	0.00

Chemical Constituents in ppm

Sample	SO4	Cl	NO3	PO4	Si	Fe
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]

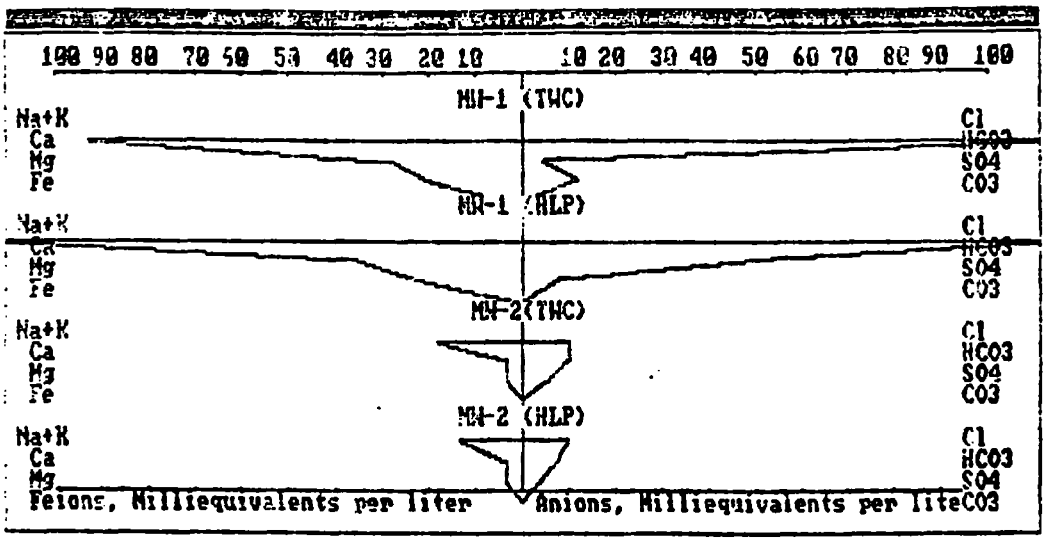
N.D = not analyzed for

Attachment Z
Trilinear and Stiff Diagram

Title: HLP
[illegible]-1987
[illegible]

Percent Reacting Values

Sample	%Ca	%Mg	%(Na+K)	%Cl	%SO4	%HCO3	TDS,mg/l	[illegible]
MW-1 (TWC)	[illegible]	[illegible]	65.78	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW-1 (HLP)	20.25	12.85	62.48	53.00	4.0[illegible]	88.08	11847.93	0.
MW-2(TWC)	13.58	13.28	72.60	32.96	59.22	38.49	2005.37	[illegible]
MW-2 (HLP)	18.40	17.75	64.84	42.90	17.56	35.54	1974.77	[illegible]



Title:
14-Sep-1987
09:50:30.01

Chemical Constituents in ppm

Sample	Ca	Mg	Na	K	HCO3	CO3
MW-1 (TWC)	559.00	246.00	2139.00	3.00	254.00	0.00
MW-1 (HLP)	716.00	263.00	2725.00	6.00	3256.00	0.00
MW-2(TWC)	69.00	42.00	419.00	2.00	600.00	0.00
MW-2 (HLP)	76.20	42.10	306.00	3.40	450.00	0.00

Chemical Constituents in ppm

Sample	SO4	Cl	NO3	PO4	Si	Fe
MW-1 (TWC)	566.00	4463.00	0.03	0 N.D	19.00	74.60
MW-1 (HLP)	350.00	4173.00	0.00	0 N.D	0.00	8.33
MW-2(TWC)	248.00	352.00	0.66	0 N.D	21.00	3.71
MW-2 (HLP)	175.00	345.00	0.00	0 N.D	0.00	2.07

[illegible]:5[illegible]:08.41

Chemical Constituents in Equivalents per Million

Sample	Ca	Mg	Na	K	HCO3	CO3
MW-1 (TWC)	27.89	20.24	93.05	0.08	4.16	0.00
MW-1 (HLP)	35.72	21.63	1[illegible]	0.15	53.37	0.00
MW-2(TWC)	3.44	[illegible]	18.23	[illegible]	9.83	0.00
MW-2 (HLP)	[illegible]	[illegible]	13.31	[illegible]	7.38	0.00

Chemical Constituents in Equivalents per Million

Sample	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	0.00	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	N.D	[illegible]	[illegible]

N.D= not analysed Attachment 2

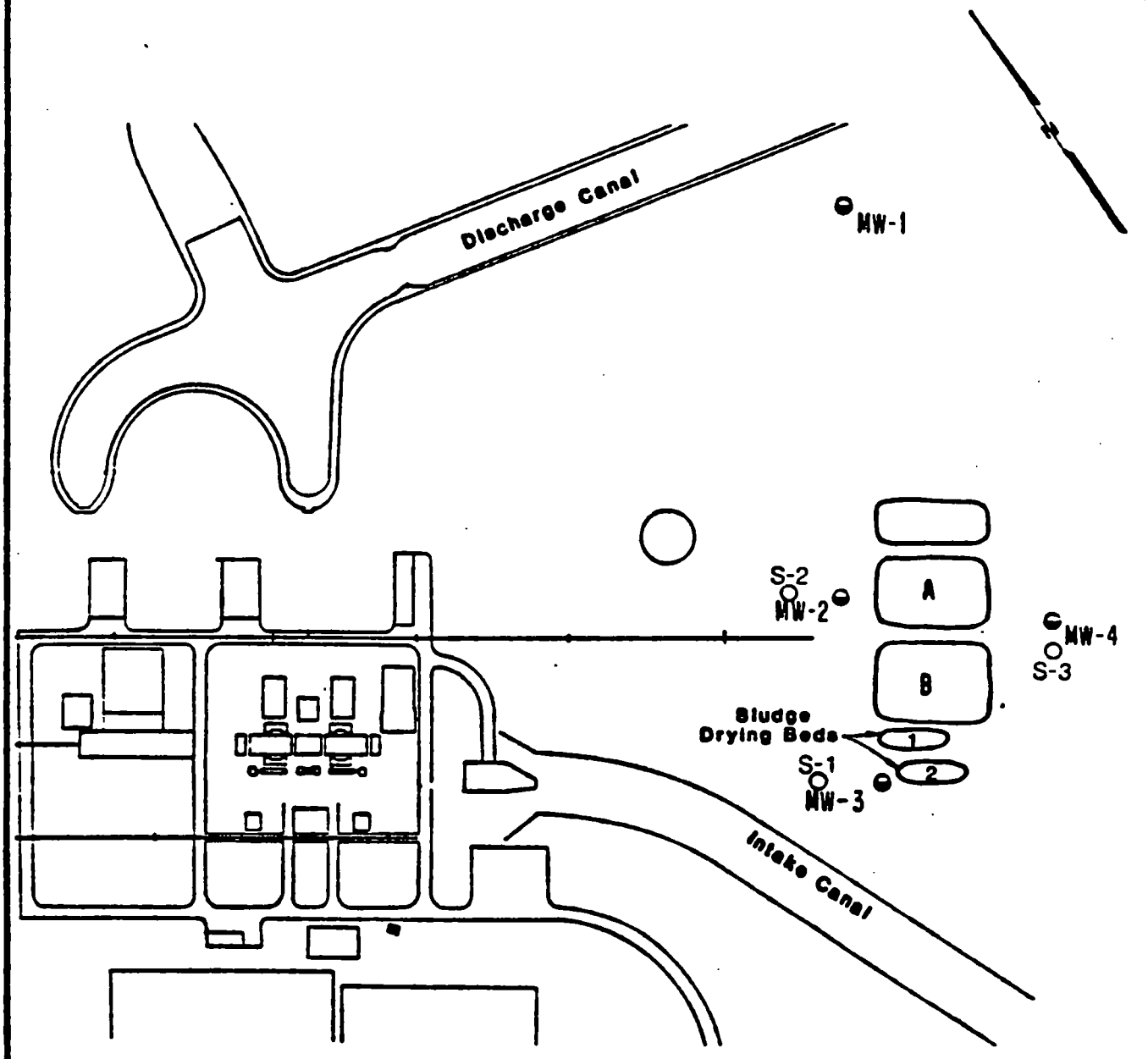
Table 2

Clay Liner Samples
Demineralizer Regenerant Impoundment
Webster Generating Station

Sample Point	pH 0-2 inch	pH 6 inch	pH 18 inch	EP Toxicity (mg/l) As	Ba	Cd	Cr	Pb	Hg	Ag	Se	Total Metals (mg/kg) As	Ba	Cd	Cr	Pb	Hg	Ag	Se
1	8.0	8.5		<0.002	<0.25	<0.05	0.1	<0.05	<0.002	<0.05	<0.002	2.93	105	<10	16	<10	<0.10	<10	0.042
2	8.6	8.7	8.7	<0.002	<0.25	<0.05	0.1	0.7	<0.002	<0.05	<0.002	4.15	180	<10	15	16	<0.10	<10	0.070
3	8.5	8.7																	
4	7.9	8.3		<0.002	<0.25	<0.05	0.2	<0.05	<0.002	<0.05	<0.002	3.70	228	<10	16	<10	<0.10	<10	0.069
5	8.2	7.7	8.3	0.007	<0.25	<0.05	<0.05	<0.05	<0.002	0.07	<0.002	3.84	203	<10	17	11	<0.10	<10	0.057
6	8.6	8.6																	
7	8.1	8.2																	
8	8.6	8.3	8.9	0.006	<0.25	<0.05	<0.05	<0.05	<0.002	0.2	<0.002	2.75	190	<10	13	<10	<0.10	<10	0.066
9	8.5	8.5																	
10	8.2	8.5																	
11	8.4	8.3	8.7	0.006	<0.25	<0.05	0.7	<0.05	<0.002	<0.05	<0.002	3.27	173	<10	12	13	<0.10	<10	0.059
12	8.1	8.2		0.002	<0.25	<0.05	<0.05	<0.05	<0.002	<0.05	<0.002	3.37	84	<10	12	<10	<0.10	<10	0.091
Sample Mean												3.43	166	<10	14	11	<0.10	<10	0.065
Background Samples ✓																			
1												10.9	356	< 1	26	26	<0.2	< 1	0.25
2												10.6	253	< 1	21	16	<0.2	< 1	<0.2
3												9.89	80.4	< 1	20	20	<0.2	< 1	0.31
Background Mean												10.5	230	< 1	22	21	<0.2	< 1	0.253

RESOURCE ENGINEERING

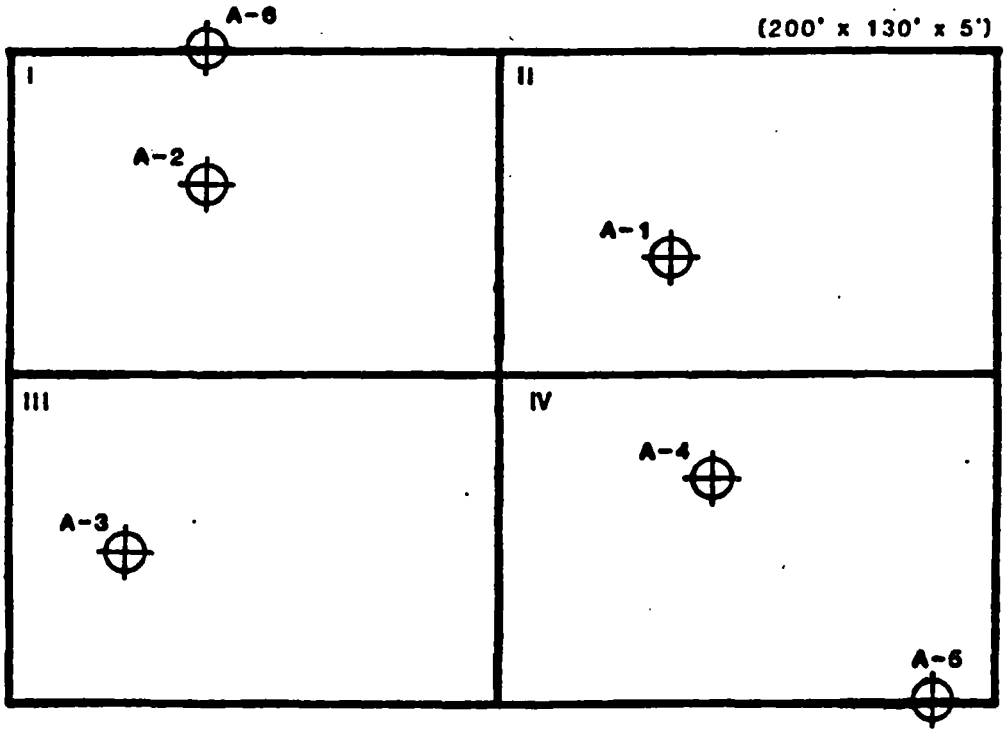
Attachment AA



RESOURCE ENGINEERING INC.
ENVIRONMENTAL CONSULTANTS
WEBSTER, TEXAS

FIGURE 2
FACILITY MAP
WEBSTER GENERATING STATION

Attachment AA



⊕ BORING LOCATIONS

RESOURCE ENGINEERING INC.
ENVIRONMENTAL CONSULTANTS
HOUSTON, TEXAS

FIGURE 3
DEMINERALIZER REGENERANT/ BOILER BLOWDOWN IMPOUNDMENT CLAY LINER BORING LOCATIONS WEBSTER GENERATING STATION

DRAWN BY	DATE	PROJECT NO
N.L.J.	11-4-85	344-01

Attachment AA

TEXAS DEPARTMENT OF WATER RESOURCES

No. GW 03800 APR 30 1987

P.O. Box 13087, Capitol Station
Austin, Texas 78711

Org. No. 444
Sample No. MW-2

Owner H L & P Address Houston Zip

County Harris Well No. MW-2

Location Webster Power STA. 31633

Date Drilled Depth Aquifer

Water Level Sample After Pumping Mins. (Hrs.) Yield GPM Temperature °F

Point of Collection well / bailer Appearance Clear (Turbid) Reddish Color

Use Monitor well Remarks (Over)

Date Collected 4-24-87 Time 11:50 A By Robert Hahn

Send copy of completed analysis to Robert W. Hahn TDWR Office No. 1116A

TDWR-0778 (Rev. 10-24-84)

TEXAS DEPARTMENT OF WATER RESOURCES

No. GW 03800 MW-2
Point of Collection

P.O. Box 13087, Capitol Station

JUN 16 1987

Work No. 4003
Org. No. 444
Sample No. MW-2

Lab Used TDH APR 27 '87 Lab [redacted] Method of Preservation ice / none

Type of Facility Power Plant Date Completed JUN 12 87 Analyst's Signature

1st

	Mg/l	EPM		Mg/l	EPM	Other Ions	Mg/l
Silica	21		Carbonate	0	0.00	☒ Bromide	0.3
Calcium	69	3.48	Bicarbonate	600	9.84	☒ Iodide	5.9
Magnesium	42	3.44	Sulfate	248	5.17	☐	
Sodium	419	18.22	Chloride	352	9.92	☐	
	Total	25.14	Fluoride	1.4	0.07	☐	
☒ Potassium	2	0.05	Nitrate-N	0.66	0.05	☐	
☐ Boron	0.35	25.19	pH 8.0	Total	25.05	☐	
☐ Iron	see Heavy metals		Dissolved Solids (sum)	1453			

Phenolphthalein Alkalinity as $CaCO_3$

Total Alkalinity as $CaCO_3$ (9.84) 492

Total Hardness as $CaCO_3$

Specific Conductance (Micromhos/CM) 1780

Diluted Conductance (Micromhos/CM)

Remarks

"☐" Items will be analyzed if checked, total Iron requires separate sample.

TDWR-0778 Rev. 10-24-84

Attachment U